

# **THE ROLE OF SMALL MANUFACTURING ENTERPRISES IN SUSTAINABLE REGIONAL DEVELOPMENT**

Ismailia governorate as a case study in Egypt

Als Dissertation

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## SUMMARY

During the last ten years the small manufacturing enterprises (SMEs)\* sector has become firmly established at the top of the development agenda for many countries, hence, marking this sector's increasingly acknowledged economic importance. Evidence from various parts of the world has shown clear signs of the growth of SMEs. Despite this, little attention has been given to understanding the environmental impacts these enterprises produce or to defining the role these entities play in terms of sustainable regional development. These notions are particularly true for developing countries. It is with this premise in mind that this thesis sets out to contribute to a better understanding of the influence of SMEs on sustainable regional development, as well as the contribution of SMEs to the economy in terms of job creation in the context of developing countries using Egypt and its Ismailia region as the basis for case study. This body of work is comprised of seven chapters logically discussing several relevant themes and notions related to the impact of SMEs in sustainable regional development in developing countries and the subsequent formulation of recommendations to improve the role SMEs play in the sustainable development arena.

Three main hypotheses were formulated relevant to the role of SMEs in sustainable regional development. In general, these hypotheses relate to the following: 1) The contribution of SMEs to the regional economy (i.e., SMEs begin to activate regional and national chains of economic added value as they create job opportunities with good incomes on a regional scale); 2) Problems and barriers (i.e., economic - social - environmental) SMEs face in achieving sustainable development; and 3) The potential for SMEs to utilize available existing resources to enhance their role in achieving sustainable regional development (i.e., rediscover the use of local raw-materials/develop and utilize a cooperative strategy). In order to test these three hypotheses and to answer related questions, an analysis was undertaken within the framework of two spatial tiers: national and regional, that is Egypt and Ismailia, respectively. Two types of data were used - primary and secondary. A sample of 101 entrepreneurs and 100 employees were interviewed from the Ismailia region. The results of these interviews were analyzed in the empirical portions of this thesis.

**Chapter one** pertains to the justification of the thesis; its objectives; the development of related research questions and hypotheses; the methodology used for data analysis; data sources used; questionnaire design; survey methods; and problems of data collection.

**Chapter two** discusses the concept of SMEs worldwide and in Egypt as a basis from which to provide a concrete definition of SMEs that is used in the empirical portion of this study. In addition, the potential of SMEs and the problems facing SMEs in terms of sustainable regional development, as well as the differences between SMEs and larger enterprises are discussed in this chapter. Changes that resulted from the contribution of SMEs over time, in terms of employees and enterprises relative to the national economy, are cited in order to correctly identify the situation of SMEs and their significant contribution to regional development in Egypt.

The literature review included in this chapter indicates that the definition of SMEs is relative and varies from one country to another. In absence of an official definition for SMEs in Egypt and for the purposes of this study, the research suggested a definition for small-manufacturing enterprises (naturally, including micro-manufacturers/enterprises) in Egypt to be **those manufacturers with 20**

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\* In this dissertation the abbreviation SMEs is used in different ways according to the specific context. In chapter 1, 2, 3 the term refers to small and medium enterprises in general, whereas in chapter 4, 5, 6, 7 the term is used as abbreviation for small manufacturing enterprises of which most are micro enterprises.



**or fewer employees and capital investments not exceeding 500.000EGP (i.e., \$80.839,40 in 2003 US figures). Note: capital investments exclude land and building and are subject to the condition that ownership of the entity is independent; that is the unit is not owned, controlled or a subsidiary of any other industrial undertaking.**

A number of positive attributes contributing to the success of SMEs in terms of sustainable development, at both the regional and the enterprise level, were identified through this work. First, SMEs can play a very significant role in the national economic field especially in developing countries due to their capabilities to create a greater number of job opportunities with less investment than larger manufacturing entities. Furthermore, SMEs can help decrease migration to large cities and achieve population stabilization due to the ease with which these businesses can expand within inter/intra-regional and rural areas. SMEs are vitally important to the Egyptian economy whereby they comprise 97.7% of all business and provide approximately 64.1% of employment. In spite of their high growth rate, in terms of both employment and numbers of establishments, SMEs lose far more job opportunities than large- and medium-size enterprises. Finally, the work of SMEs through an industrial cluster system is more efficient than the individual work of unconnected/unlinked SMEs.

The relationship between SMEs and sustainable urban and regional development is highlighted in more detail in **chapter three**. This relationship is discussed within the context of the notions of the overall concept of sustainable development, the sustainable regional development agenda in Egypt and related regulations, and the positive characteristics SMEs need in order to bring sustainable urban and regional development to fruition.

Furthermore, this chapter shows the close relationship identified between sustainable SMEs and sustainable urban and regional development. The sheer numbers of SMEs, in general, together with their ability to expand geographically generate great influences on the economic, social and environmental dimensions within a region. Thus, the sustainability of SMEs can help to achieve sustainable development in a region. SMEs create job opportunities, decrease unemployment and help to overcome poverty in a region. In addition, they help to increase the standard of living and quality of life for a population on a very large scale in a region. Furthermore, these entities help to decrease the pressures on urban areas. Since SMEs are concerned with using renewable materials, decreasing energy consumption and on-going recycling, any activities they undertake related to these values will help to protect resources and energy for future generations.

The 2005 Environment Sustainability Index (ESI) ranked Egypt 115th among the 146 nations analyzed. This position reflects the fact that the environment in Egypt is still suffering from many fundamental problems. The Egyptian experience is very poor in terms of legislation for SMEs. SMEs must comply with laws that do not differentiate one type of enterprise from another based upon size. Consequently, SMEs must comply with laws pertaining to the regulation of industrial establishments, environmental practices, taxation, and social insurance not necessarily designed to accommodate or respond to the special needs and concerns of these smaller business entities. This is considered to be one of the largest obstacles toward the sustainability of such small-scale enterprises.

A sustainable SME is an enterprise that achieves the socio-economic objectives of the enterprise and its employees without harming the eco-system. A sustainable SME should use renewable resources, as well as clean energy, at every opportunity possible. A sustainable SME should maximize the use of human ability and potential while, at the same time, minimizing the use of natural resources. Not only should a sustainable SME be devoted to the fulfilment of elementary needs, but it should also strive to

meet these needs in ways that minimize the environmental impact and maximize possible economic and social gain.

**Chapter four** examines the first hypothesis of this study; this hypothesis states that, in general, SMEs have a positive effect on the economic and social development of a region. This chapter evaluates the ability of SMEs to drive the regional and national chains of economic added value; the capability of SMEs to create job opportunities at the regional level; and the effects of SMEs in terms of improved life-style and standard of living of employees and their families taking into account educational levels, employment and marital status. In addition, related housing issues and the socio-economic status of the employees in SMEs in the study area are compared to the averages of those at the regional and national levels.

This chapter further indicates the study findings that SMEs in the study area (i.e., Ismailia) possess high potential to enhance their capability of realizing added value at the enterprise level. However, the ability of SMEs to impact and drive the chain of added value within the region or to create job opportunities outside of their respective domains/areas of expertise is limited. The vast majority of SMEs perform all roles involved in a normal production process from raw material handling to marketing and distribution. This obstructs the roles of other entities with specialized business expertise that could have performed these tasks more efficiently.

Analysis of SMEs in the study area indicated that the SMEs in this region have a large amount of leverage from which to provide suitable job opportunities. It is evident that they could play a significant role in the employees by providing jobs at both the national, as well as regional levels. A total of 97.7% of enterprises in the study area are SMEs; they are comprised of 40.2% of all employees of the industrial sector within the region. One of the most important results discovered as part of this research is that SMEs have more capability to absorb employees and create new job opportunities than larger industries. However, these businesses do lack the strength to persist; not only do these concerns exceed larger industries in the rate of initiation and setup, but they also exceed larger businesses in the rate of business deceleration and failure.

SMEs in the study area have a substantial ability to provide suitable incomes for a large percentage of the enterprises, themselves, as well as for their respective employees. A total of 85% of SMEs in the study area have achieved a positive added value that annually exceeded 10% of the capital invested. In spite of this fact, more than 46% of employees of SMEs are generally below the poverty line (by the U.S. \$3 per day standard). About 21% of this previous percentage (i.e., 21% of 46%) is considered to be classified as unessential employees (third-class employees). However, according to the Egyptian standard for the lower poverty limit (i.e., in U.S. dollars, \$2 per day) that is used to estimate the number of people unable to afford the cost of essential food and other basic needs such as education, only 6.5% of the essential employees (first- and second-class employees) in the study area will fall below the poverty line. This is considered to be a very good percentage by comparison to that of the entire country whereby 20% of people live below the poverty line. Moreover, it has been indicated that there is an inverse relationship between the employees' wages and the problems SMEs face. SMEs in the study area have succeeded in providing a satisfactory standard of living with suitable incomes for the majority of their employees. This is clearly demonstrated in their housing, social and economic life patterns as compared to the average situation at the national and regional levels (i.e., housing ownership). Nevertheless, there are many obstacles hindering the survival of small industries in the region.

**Chapter five** tests the second hypothesis in this thesis which states that the affects of a variety of types and sizes of SMEs on regional sustainable development is limited, at least for the time being. This chapter provides an analysis of economic, social and environmental obstacles and constraints that SMEs must face on a daily basis and examines the sustainability of SMEs from the perspective of economic impacts given the limited amount of capital invested by SMEs, as well as the instability of supply and demand and related high market risks for these small businesses. It further examines the social barriers and constraints relative to sustainable regional development within the context of influences of social status of employees in light of the low-level qualifications of employees and the absence of suitable insurance and work protection. Furthermore, this chapter examines the related effects on overall sustainable development at the enterprise and regional levels given the absence of ecological awareness on the part of both entrepreneurs and employees.

Research indicated that the combination of limited capital investment by SMEs, inconsistent structures of supply and demand, and high market risks can prevent these small industries from playing a significant role in the enhancement of sustainable regional development in the long-run. Most small investors in the study area have insufficient knowledge regarding market forces and requirements. Consequently, these concerns are compelled to copy past and current successful business patterns in an attempt to achieve the same or similar levels of success. Therefore, the supply of goods and services in the marketplace will increase relative to the demand that is present; the market then becomes oversaturated. This imbalance in the marketplace can then lead to difficulties in the marketing of products. This ultimately creates negative impacts on the future of SMEs, especially those with limited capital enterprises as they depend primarily on the local market for survival. The nature of large-capital enterprises and their ability to market their products at both the regional and national levels is such that these particular entities are more able to resist the critical point where an enterprise is forced to discontinue conducting business; therefore, the length of survival of larger businesses is generally greater than that of SMEs with limited capital.

There are many social variables that affect the production process of SMEs. First, SMEs offer job opportunities for somewhat rather low-skilled/semi-skilled employees. Typically, these entities do not provide suitable social insurance; nor do they ensure sufficient industrial safety measures are present during production. Continuation of these practices will threaten the future of these industries and resulting sustainable regional development in the long-run. Per the research undertaken, a total of 68% of SMEs that provide social insurance for less than 64.4% of their employees, suffer from structural problems within their production processes. These problems may lead to failures for these enterprises in the short-term. If this is the case, then many job opportunities will be lost not only within SMEs but also in related supportive activities at the regional level (i.e., raw material suppliers, marketing concerns, distribution networks, etc.).

The production processes incorporated within SMEs have serious environmental impacts. This is attributed to the lack of environmental awareness as evidenced by the overuse of available raw materials and energy without regard to the potential needs of future generations, as well as the absence of production control mechanisms. The percentage of SMEs in the study area that depend on local natural and renewable raw materials did not exceed 10% in spite of the fact that needed raw materials are readily available locally. More than 70% of SMEs within the target area in the wood industry sector import raw materials for product manufacturing. Furthermore, the gaseous pollution, air-

particulates, and noise that SMEs in the study area generate exceed the permissible safety limits both within the enterprise zone and externally in the surrounding area. The research concludes that these enterprises should be physically located together in order to minimize the negative environmental impacts. In particular, those SMEs generating the most pollution should be confined within a separate industrial zone. In the end, the implementation of this strategy would facilitate the collection of solid waste materials for recycling and industrial wastes for treatment.

In **chapter six** the potential by which SMEs can utilize their assets to enhance their contribution to sustainable regional development is evaluated; the potential opportunities available to SMEs to make better use of local raw materials and to drive the chain of economic activity within the Ismailia region were examined. The ability of SMEs to work more efficiently through the use of clusters and networks as a potential strategy is clarified. This chapter specifically tests the third hypothesis which states that SMEs can provide a substantial level of contribution to sustainable development by utilizing available local, natural, renewable raw materials whenever possible instead of importing raw materials from regional or national markets. However, thus far, this potential remains relatively “untapped” and has only been used to a limited extent. Many SMEs do not make use of available work potential on a regional level through industrial clustering (e.g., the idea of production lines) even when the desire to do so is present.

Currently, the vast majority of SMEs in the study area depend upon a supply of raw materials that is either imported from abroad or from the national market. Research reveals that the dependence of SMEs on alternate, local raw materials will minimize the environmental impacts resulting from the transport process and, therefore, lead to new job creation opportunities that did not previously exist within the region. If the SMEs in the study area depend solely on local, rather than imported raw materials, then the total number of enterprises that can be created in the field of wood industry will reach 2,324. The Ismailia governorate has 20,000 unemployed persons; this represents about 8.8% of the respective labour-force. The opportunity is then available for SMEs to draw from this pool of unemployed persons and by so doing reduce a substantial portion of the unemployment at the both the regional and national levels. The wood sector alone is able to provide approximately 23,000 future job opportunities on a regional scale. This will help to solve the unemployment problem at the regional level which is considered to be one of the most important goals of sustainable regional development.

By using industrial clusters and networks, SMEs can overcome the obstacles related to their isolation, size, weak capital base, poor access to information, limited finances, and volume and quality of production, as well. SMEs can improve their competitive edge and efficiency through these collaborative efforts. Those that are part of industrial clusters can gain two advantages: 1) improved flexibility and 2) rapid reaction time therefore rendering them more competitive than larger firms and without the handicap of size. By adopting the use of cluster and network policies, the SME sector will maximize not only development opportunities within a particular sector but also the role played by these enterprises in achieving sustainable regional development. As a result, the industrial cluster of SMEs will provide improved opportunities to preserve the environment. Recycling of solid waste and treatment of liquid waste will be more easily facilitated. In addition, the industrial cluster of SMEs will provide additional job opportunities within other areas of the business cycle (i.e., communication, marketing and related marketing analyses, management systems, warehouse management, procurement and distribution, etc.). Improved jobs, in turn, will raise the individual’s standard of living thereby reducing poverty within the region, the main aim sought by sustainable development.

**Chapter Seven** presents a compilation of the detailed findings of this thesis along with the lessons that have emerged as a result of the research conducted. A series of policies and recommendations are provided as a means from which to create favourable conditions to encourage SMEs to play a more significant role in the national economy and in subsequent sustainable regional development.

A number of conclusions are drawn from this study. Small-scale industries currently provide and will continue to be a source of employment and income for millions of people in developing countries. From a national perspective, their activities are not usually the most serious source of environmental degradation, but, collectively, sheer numbers may translate into substantial impacts on the eco-system. While the individual SME has financial problems related to the treatment and disposal of its waste, the adoption of an industrial cluster strategy for SMEs can provide an efficient solution to this problem. A cluster should consist of several single enterprises located in close proximity to one another, thereby, improving the ease of and costs associated with the treatment and disposal of environmental wastes.

This study advocates the necessity of raising the degree of environmental awareness for organizations, syndicates, unions and societies related to SMEs, as well as entrepreneurs and labourers in their respective domains. Opportunities for raising environmental awareness can be implemented through a series of organized seminars, meetings and enterprises designed to motivate individuals and small businesses within the society of SMEs to incorporate an ecological sense and approach into their daily behaviour and practices. Furthermore, a variety of programs should be developed for protecting SMEs from bankruptcy and the danger of failure and subsequent closure and job losses that would otherwise perpetuate negative affects relative to regional sustainable development. Recommendations are made within the framework of these conclusions to improve regional environmental policy, to develop entrepreneurship, to enhance cooperation between SMES and local technical and financial institutions, and to distribute information to would-be entrepreneurs. Furthermore, a national policy must be adopted in Egypt in order for the SMEs sector to be successful in its contribution to sustainable development. Such policy must be all-inclusive and provide for the technical support of SMEs, financial support to SMEs, environmental support to SMEs, as well as provide overarching legislative support relevant to this particular sector of the business environment.

## ZUSAMMENFASSUNG

Kleinbetriebe des produzierenden Gewerbes (KUs) spielen eine besonders große Rolle bei der wirtschaftlichen und sozialen Entwicklung einer Region, vor allem in Entwicklungsländern. In den letzten zehn Jahren stehen die KUs in vielen Ländern weit oben auf der Agenda für wirtschaftliche und regionale Entwicklung. Ein Beleg dafür ist, dass die Wachstumsrate der KUs in verschiedenen Ländern der Welt jährlich steigt (Amr 1994). Dabei wird bisher allerdings kaum auf die Wirkungen geachtet, die diese Unternehmen für die nachhaltige Entwicklung von Regionen und besonders für den Umweltschutz haben. Diese Dissertation zielt darauf ab, am Beispiel des Governorates von Ismailia als Fallstudie in Ägypten mehr Klarheit in dieser zentralen Frage zu schaffen. Weiterhin strebt diese Arbeit an, Empfehlungen zu formulieren, um die Rolle der KUs im Sinne einer nachhaltigen Regionalentwicklung zu unterstützen.

Um die Rolle von KUs innerhalb der nachhaltigen Regionalentwicklung zu untersuchen, wurden drei Haupthypothesen formuliert: die erste Hypothese bezieht sich auf die grundsätzlich positive Wirkung von KUs auf die wirtschaftliche und soziale Entwicklung einer Region. Die zweite Hypothese berücksichtigt die wirtschaftlichen, sozialen und ökologischen Probleme, die – in den einzelnen Branchen in unterschiedlichem Ausmaß - den Wirkungen von KUs für eine nachhaltige regionale Entwicklung derzeit entgegenstehen. Mit der Frage nach den zum Teil erheblichen Potentialen von KUs für eine nachhaltige Entwicklung von Regionen befasst sich die dritte Hypothese.

Die Prüfung dieser Hypothesen und der mit ihnen in Verbindung stehenden Fragen wurde auf zwei räumlichen Ebenen, der nationalen und der regionalen, vorgenommen. Verwendet wurden dabei sowohl primäre als auch sekundäre Daten. Das Governorate von Ismailia in Ägypten wurde als Fallstudie ausgewählt. Als Basis dafür wurden stichprobenartig 100 Interviews mit Unternehmern und 101 Interviews mit Arbeitern durchgeführt.

Diese Arbeit besteht aus sieben Kapiteln und umfasst die relevanten Themen, die sich mit den Wirkungen von KUs auf die nachhaltige Regionalentwicklung in Entwicklungsländern, besonders am Beispiel von Ägypten, befassen.

In **Kapitel 1** wird der Forschungsgegenstand näher definiert. Zielsetzungen, Forschungsfragen, Hypothesen und methodische Aspekte werden konkretisiert.

In **Kapitel 2** wird das Konzept von KUs weltweit und speziell in Ägypten diskutiert und versucht, eine konkrete Definition der KUs zu geben. Diese wird später im empirischen Teil dieser Studie verwendet. Die Potentiale und Probleme, mit denen die KUs bei der nachhaltigen Regionalentwicklung konfrontiert sind, sowie der Unterschied zwischen KUs und größeren Unternehmen werden ebenfalls in diesem Kapitel diskutiert. Um die Situation der kleinen Unternehmen und ihren Beitrag für die Regionalentwicklung in Ägypten erfassen zu können, werden die Auswirkungen der Tätigkeit von KUs auch auf Ebene der nationalen Wirtschaft Ägyptens betrachtet.

In diesem Kapitel wird herausgearbeitet, dass die Definition von KUs relativ ist und sich von Land zu Land unterscheidet. Die vorliegende Forschungsarbeit schlägt folgende Definition für Kleinbetriebe des produzierenden Gewerbes in Ägypten vor: **KUs sind Unternehmen mit maximal 20 Angestellten, bei denen die „Kapitalkosten“ ein Volumen von 500.000 EGP (das entspricht 80.839 US \$, Stand: 2003) nicht überschreiten, und zwar ohne Grund und Boden und ohne**

**Gebäude (Bedingung: das Eigentum ist unabhängig, meist das eines Individuums, einer Familie oder einer kleinen Gruppe von Individuen).**

KUs können in Entwicklungsländern eine sehr wichtige Rolle für die Wirtschaft spielen, sogar auf nationaler Ebene. Diese Kleinbetriebe haben die Möglichkeit, in kurzer Zeit mehr Beschäftigte mit geringen Investitionen einstellen zu können. Aufgrund ihrer hohen Verbreitung in den Umlandbereichen der Stadtregionen und in ländlichen Gebieten können KUs dazu beitragen, die Emigration in die großen Städte zu verringern und die Bevölkerungszahl und -struktur in den unterschiedlichen Regionen zu stabilisieren. Trotz der hohen Wachstumsraten der KUs sowohl in Bezug auf die Anzahl der Unternehmen als auch auf die Zahl der Beschäftigten, sind diese gegenüber Unternehmen anderer Größe als instabil in ihrer Entwicklung zu bezeichnen. So schnell wie KUs im Gegensatz zu Unternehmen anderer Größe eingerichtet werden oder in ihrer Beschäftigtenzahl wachsen können, so schnell können sie jedoch unter ungünstigen Bedingungen auch wieder verschwinden bzw. die Zahl der Arbeitskräfte abbauen.

In **Kapitel 3** wird das Verhältnis zwischen KUs und nachhaltiger Stadt- und Regionalentwicklung herausgearbeitet. In diesem Kapitel wird auch die ägyptische Agenda für nachhaltige Entwicklung beleuchtet. Weiterhin werden die Eigenschaften von KUs benannt, die notwendig sind, um eine nachhaltige Entwicklung einer Region zu erzielen.

In diesem Kapitel wird festgestellt, dass es eine enge Beziehung zwischen nachhaltigen KUs und nachhaltiger urbaner und regionaler Entwicklung gibt. Die Nachhaltigkeit der KUs führt zu einer nachhaltigen Entwicklung in der Region, wobei die Anzahl an KUs und deren geografische Lage und Verbreitung entscheidend für ihren Einfluss auf die ökonomische, soziale und ökologische Dimension nachhaltiger Entwicklung sind.

Der **Environment Sustainability Index (ESI)** führte Ägypten im Jahr 2005 an 115. Stelle der 146 untersuchten Nationen. Dies spiegelt die Tatsache wider, dass Ägypten immer noch unter sehr vielen fundamentalen Entwicklungsproblemen leidet. Die ägyptischen Erfahrungen in Bezug auf eine spezielle Gesetzgebung für die KUs sind sehr gering. Diese müssen heute sowohl den Gesetzen der industriellen Einrichtungen, den Umweltgesetzen, als auch den Steuer- und Sozialversicherungsgesetzen entsprechen. Diese Gesetze unterscheiden nicht zwischen Unternehmen unterschiedlicher Größe. Dies wird als eines der großen Hindernisse für ein nachhaltiges Wirtschaften der kleinen Unternehmen angesehen. Ein KU ist dann als nachhaltig anzusehen, wenn es die sozioökonomischen Zielstellungen des Unternehmens und seiner Mitarbeiter erreicht, ohne das Ökosystem in Mitleidenschaft zu ziehen. Ein nachhaltiges KU sollte – soweit möglich – erneuerbare Ressourcen und erneuerbare und saubere Energien verwenden. Es muss die Nutzung menschlicher Fähigkeiten und Potentiale maximieren und dabei gleichzeitig die Verwendung natürlicher, nicht-erneuerbarer Ressourcen minimieren. Ein nachhaltiges KU sollte sich auch der Erfüllung elementarer Belange (z.B. Verbrauch von Rohmaterialien und Energie) widmen. Dies sollte in einer Weise geschehen, die minimale Auswirkungen auf die Umwelt hat, aber maximalen ökonomischen und sozialen Gewinn befördert.

In **Kapitel 4** wird die Hypothese, dass „Kleinbetriebe des produzierenden Gewerbes grundsätzlich eine positive Wirkung auf die wirtschaftliche und soziale Entwicklung einer Region haben, weil sie regionale und überregionale Wertschöpfungsketten in Gang setzen und regional Arbeitsplätze und Einkommen schaffen“, geprüft. Dazu wurden KUs in Ismailia an Hand von geeigneten Indikatoren untersucht. Einige dieser Indikatoren betreffen die Fähigkeit der KUs, die Wertschöpfungskette einer

Region zu aktivieren, andere beziehen sich auf das Vermögen der KUs, Arbeitsplätze in der Region zu schaffen und wieder andere sind mit den Auswirkungen der KUs auf das Einkommen und den Lebensstandard der Beschäftigten und ihrer Familien verbunden. Ergebnis der Analysen in diesem Kapitel ist, dass die Möglichkeiten der KUs, die Wertschöpfungskette in einer Region zu initiieren oder Beschäftigungsmöglichkeiten zu schaffen, begrenzt sind. Dabei übt die große Mehrheit der KUs sämtliche Rollen und Phasen des Produktionsprozesses aus. Das behindert andere Aktivitäten, die von spezialisierten Unternehmen effizienter verrichtet werden könnten.

Eines der wichtigsten Resultate dieser Forschungsarbeit ist, dass KUs größere Möglichkeiten besitzen, Arbeitskräfte zu binden und neue Arbeitsplätze zu schaffen, als Unternehmen anderer Größe. Allerdings fehlt ihnen häufig die Fähigkeit der stabilen Existenz. So übertreffen sie Unternehmen anderer Größe nicht nur in der Entstehungsrate, sondern auch im Anteil an Umsatzflauten und Konkursen. Es wird aufgezeigt, dass ein umgekehrtes Verhältnis zwischen den Gehältern der Beschäftigten und den Problemen der KUs besteht. KUs im Untersuchungsgebiet haben für ihre Beschäftigten erfolgreich eine zufrieden stellende Lebensqualität mit angemessenen Einkommen geschaffen, was sich deutlich im sozialen und ökonomischen Lebensstandard sowie in der Wohnungsqualität widerspiegelt, die im Vergleich zur nationalen oder regionalen Ebene deutlich höher sind. Jedoch gibt es auch Bedrohungen für das Überleben der KUs in einer Region, die somit die Sicherstellung von stabilen Lebensverhältnissen ihrer Beschäftigten gefährden können.

**Kapitel 5** behandelt die folgende Hypothese: „Die Wirkungen von KUs auf eine nachhaltige regionale Entwicklung sind derzeit durch wirtschaftliche, soziale und ökologische Probleme begrenzt, die in den einzelnen Branchen in unterschiedlichem Ausmaß zum Tragen kommen.“ In diesem Kapitel werden die Auswirkungen der geringen Kapitalausstattung, der instabilen Zuliefer- und Abnehmerstrukturen und der erheblichen Marktrisiken auf die Nachhaltigkeit der KUs diskutiert. Gleichfalls wird der Einfluss der niedrigen Qualifikation der Beschäftigten und der geringen Standards bei der sozialen Absicherung und beim Arbeitsschutz auf die Nachhaltigkeit der KUs analysiert. Außerdem werden die Effekte des mangelnden Umweltbewusstseins der Unternehmer und der Beschäftigten auf die nachhaltige Entwicklung eines Unternehmens in einer Region beleuchtet.

In diesem Kapitel wird aufgezeigt, dass die geringe Kapitalausstattung der KUs und die instabilen Zuliefer- und Abnehmerstrukturen sowie die erheblichen Marktrisiken den Beitrag der KUs für eine nachhaltige Regionalentwicklung beschränken oder gar verhindern können. So haben die meisten kleineren Investoren im Bereich der Fallstudie unzureichende Kenntnis der Markterfordernisse. Dies veranlasst sie häufig, erfolgreiche Unternehmensmuster einfach zu kopieren. Das hat oft eine Überproduktion und anschließende Absatzschwierigkeiten zur Folge. Der sich daraus ergebende Geschäftsrückgang betrifft besonders KUs mit geringer Kapitalausstattung, denn sie sind hauptsächlich vom lokalen Markt abhängig, während Unternehmen mit umfangreicherer Kapitalausstattung den für das Überleben entscheidenden Grenzbereich weniger schnell unterschreiten, da sie ihre Produkte sowohl regional als auch überregional vermarkten können.

Weiterhin gibt es viele soziale Variablen, die die Produktion kleiner Unternehmen beeinflussen. So bieten sie in erster Linie Arbeitsplätze für Geringqualifizierte an und gewährleisten weder eine geeignete Sozialversicherung noch ausreichende Arbeitsschutzmaßnahmen. So leiden 68% der KUs, die für weniger als 64,4% ihrer Arbeiter eine Sozialversicherung bereitstellen, unter strukturellen Problemen in ihrem Produktionsprozess. Dies bedroht die Zukunft der Unternehmen und auch die nachhaltige regionale Entwicklung auf lange Sicht.



Der Produktionsprozess in den KUs ist mit erheblichen Umweltrisiken verbunden. Diese resultieren vor allem aus dem Mangel an Umweltbewusstsein und völlig unzureichenden Kontrollmechanismen und zeigen sich im übermäßigen Verbrauch von Rohmaterial und Energie. Dabei wird das Recht zukünftiger Generationen auf diese Ressourcen völlig außer Acht gelassen. Die faktische Umweltverschmutzung und Lärmbelästigung überschreitet die zulässigen Grenzen entweder innerhalb des Unternehmensgebietes oder in der Umgebung.

**Kapitel 6** diskutiert die Hypothese: „Kleinbetriebe des produzierenden Gewerbes bieten erhebliche Potentiale für eine nachhaltige Entwicklung der Regionen“. Dieses Kapitel zeigt die Möglichkeit von KUs auf, lokale Rohmaterialien zu verwenden und die Wertschöpfungsketten innerhalb der Region in Gang zu setzen bzw. zu fördern. Weiterhin wird die Fähigkeit von KUs, Arbeit durch Clusterbildung und Vernetzung zu nutzen, in diesem Kapitel beleuchtet, auch wenn dies bislang nur in geringem Maße geschieht.

Momentan hängen die meisten KUs von Rohstoffimporten aus dem Ausland oder einer Bereitstellung von Rohstoffen vom nationalen Markt ab. Die Forschung macht deutlich, dass die Nutzung von alternativen lokalen Rohstoffen durch die KUs die resultierenden Umweltbeeinflussungen mindern würde. Weiterhin würden neue Arbeitsplätze in der Region geschaffen, die zuvor nicht existierten. Zum Beispiel könnte die Gesamtzahl neuer Unternehmen auf dem Holzgewerbesektor um 2.324 steigen, wenn die KUs im Untersuchungsgebiet an Stelle importierter Ware zukünftig lokale Rohstoffe einsetzen würden. Die Ismailia Region hat zurzeit 20.000 Arbeitslose. Dies entspricht einer Arbeitslosenquote von 8,8%. Die KUs hätten die Möglichkeit, einen Großteil dieser Erwerbslosen sofort zu beschäftigen. Allein der Holzsektor ist im Stande, 23.000 Arbeitsplätze neu zu schaffen. Dies würde dazu beitragen, das Problem der Arbeitslosigkeit auf regionaler Ebene zu lösen. Damit könnte eines der wichtigsten Ziele der nachhaltigen regionalen Entwicklung erreicht werden.

Organisiert in Clustern und Netzwerken können KUs Probleme besser überwinden, die sich auf ihre Isolation, ihre Größe, die schwache Kapitalgrundlage, den geringen Zugang zu Informationen und auf Finanzen, Umfang und Qualität der Produktion beziehen. In gemeinschaftlichen Formen können KUs ihren Wettbewerbsvorteil und ihre Effizienz steigern. KUs in Clustern können von zwei Vorteilen, der Flexibilität und schnellen Reaktion, profitieren und wettbewerbsfähiger sein als große Firmen. Die Einführung von Richtlinien für Clusterbildung und Netzwerke im KU-Sektor wird nicht nur Entwicklungsmöglichkeiten dieses Sektors maximieren, sondern auch die Rolle, die diese Unternehmen bei der Durchsetzung nachhaltiger regionaler Entwicklung spielen, verbessern. Dabei erbringen industrielle Cluster große Chancen auch für den Umweltschutz. Es erleichtert das Recycling fester Abfälle und die Behandlung von Abwässern vor der Einleitung in die Kanalisation. Zudem bieten industrielle Cluster von KUs Beschäftigungsmöglichkeiten in vielen neuen Bereichen (z.B. Marketing und Service). Dies wiederum bewirkt den Anstieg des individuellen Lebensstandards und die Reduzierung der Armut - das Hauptziel nachhaltiger Entwicklung.

**Kapitel 7** beinhaltet Ergebnisse und Schlussfolgerungen. Die Antworten auf die gestellten Fragen sowie die Ergebnisse der Prüfung der Hypothesen werden ausführlich dargelegt. Damit können Handlungsempfehlungen abgeleitet werden, wie der Beitrag der KUs zu einer nachhaltigen Entwicklung im untersuchten Gebiet erhöht werden kann. Diese Dissertation kommt zu einer Reihe von Ergebnissen und schlägt Handlungsempfehlungen vor, um den Beitrag von KUs für eine stabile und nachhaltige Entwicklung von Regionen zu erhöhen: Die KUs stellen eine Quelle der Beschäftigung und des Einkommens für viele Millionen Menschen in Entwicklungsländer dar, ein Aspekt, der auch für die Zukunft seine Gültigkeit besitzen wird.

Aus nationaler Perspektive ist die Tätigkeit der KUs einzeln betrachtet normalerweise keine herausragende Ursache der Umweltverschmutzung. Die große Zahl dieser Unternehmen kann aber zu erheblichen Auswirkungen auf die Umwelt führen. Ein KU allein hat finanzielle Probleme bei der Entsorgung seiner Abfälle. Die Einführung der Clusterbildung und Vernetzung von KUs in separaten Gewerbegebieten würde dagegen helfen, mit diesem Problem effizienter umzugehen. Die Clusterbildung einzelner Unternehmen, die nah beieinander liegen, ermöglicht die gezielte Behandlung der Abfälle, macht sie einfacher und zugleich preiswerter. Beispielsweise würde das Sammeln fester Abfälle für das Recycling und die Behandlung industrieller Abwässer vor der Zuführung in die öffentliche Kanalisation erleichtert werden.

Der einfache Mitarbeiter darf bei den kleinen Unternehmen nicht vergessen werden. Dieses Humankapital ist genauso wichtig für das Fortbestehen, wie das Eigenkapital des Unternehmens und deswegen sollte mit den Beschäftigten ein guter Umgang gepflegt werden. Für die Mitarbeiter sollten sowohl die Sicherheit am Arbeitsplatz als auch die soziale Absicherung gewährleistet werden. Um das Humankapital effektiver nutzen zu können, sollte in die Verbesserung der handwerklichen Fertigkeiten und der theoretischen Grundlagen durch eine gezielte Ausbildung investiert werden, z.B. durch die Schaffung von Schulen und Ausbildungswerkstätten. Damit wird ein Unternehmen in die Lage versetzt, qualitativ hochwertige und innovative Erzeugnisse herstellen zu können. Begabte und gut ausgebildete Mitarbeiter können neue Produkte entwickeln oder vorhandene optimieren und somit besser auf die Anforderungen des Marktes eingehen. Diese schwierige Aufgabe kann nicht nur den kleinen Unternehmen allein überlassen werden. Wichtig ist eine Zusammenarbeit zwischen den zuständigen Behörden und den kleinen Unternehmen, d.h. der Staat muss die KUs in seine wirtschaftlichen und sozialen Bemühungen und Entwicklungskonzeptionen einbeziehen und letztlich in die Entwicklung kleinbetrieblicher Strukturen investieren.

Die zu leistende Hilfe für die kleinen Unternehmen sollte sich dabei nicht nur auf eine finanzielle Unterstützung beschränken. Die gezielte Förderung muss auch eine fachliche und umweltbezogene Beratung umfassen. Zum Beispiel sollte Hilfe zum Einsatz innovativer und umweltgerechter Technologien in der Produktion von Experten aus den staatlichen Umweltbehörden angeboten werden. Als ein erster Schritt ist etwa im Bäckereiwesen die Nutzung von Erdgas als im Vergleich zum Öl umweltfreundlichere Energiequelle erforderlich. Zunehmend sollte auch eine Beratung auf dem Gebiet der regenerativen Energien und deren Anwendung in der Produktion für die KUs stattfinden. Nur so kann in Zukunft schrittweise auf umweltschädliche Energiequellen verzichtet werden. Ebenso sollten die kleinen Unternehmen über Möglichkeiten des Energiesparens aufgeklärt werden. Fachliche Hilfe zur Wiederverwertung und Nutzung von Produktionsmüll sollte ebenfalls angeboten werden.

Das Umweltbewusstsein von Organisationen, Verbänden und Kammern, die zu den Kleinbetrieben des produzierenden Gewerbes einen engen Bezug haben, muss weiter sensibilisiert werden. Das Umweltbewusstsein der Eigentümer der kleinen Unternehmen und deren Mitarbeiter sollte durch praktische und theoretische Schulungen weiter verbessert werden. Es muss sich ein Gefühl für die Umwelt entwickeln und während der täglichen Arbeit darauf geachtet werden. Es müssen Programme erstellt und Wege beschritten werden, die mithelfen können, kleine Unternehmen vor Misserfolg, Bankrott und Schließung zu schützen sowie den Verlust von Arbeitsplätzen und den damit verbundenen negativen Einfluss auf die nachhaltige Entwicklung einer Region zu verhindern. Clusterbildung und Vernetzung sind die besten Strategien für KUs, um ihren Anspruch auf Nachhaltigkeit, sowohl auf Unternehmensebene als auch auf regionaler Ebene, zu verstärken.

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## Versicherung

Hiermit versichere ich, dass ich die vorliegende Arbeit ohne unzulässige Hilfe Dritter und ohne Benutzung anderer als der angegebenen Hilfsmittel angefertigt habe, die aus fremden Quellen direkt oder indirekt übernommenen Gedanken sind als solche kenntlich gemacht. Die Arbeit wurde bisher weder im Inland noch im Ausland in gleicher oder ähnlicher form einer anderen Prüfungsbehörde vorgelegt.

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Ich erkenne die Promotionsordnung an der Fakultät Forst -, Geo-, Hydrowissenschaften der Technischen Universität Dresden an.

Dresden, den 01. September 2006

Hefnawy Abdulla



## Chapter 1: Introduction

Small and medium-sized enterprises (SMEs)<sup>♦</sup> make up the most important sector of a nation's economy. They provide employment opportunities for millions of individuals; their work is strongly customer-orientated; they are a source of innovation and entrepreneurial spirit; and they create competition and are the seed for enterprises of the future (Hillary 2000). The world-wide contribution of SMEs to economic development is significant. In the EU, for example, about 90% of all enterprises are SMEs,<sup>\*</sup> and they account for 70% of all economic activities. In developing countries, the economic importance of SMEs is similarly higher. In Egypt, for example, about 99% of the enterprises are SMEs, and they create 77% of job opportunities (CAPMAS 2000). The global trend of larger enterprises to reorganize, downsize and outsource with the increase in franchising and self-employment increases the number of SMEs.

The relative contribution of SMEs to the total manufacturing environmental impact is unknown, but collectively, their sheer numbers may mean that their impact on the eco-system could be substantial. SMEs commonly dominate resource and emission intensive trades such as metal finishing, leather tanning, dry cleaning, printing and dyeing, brewing, food processing, fish farming, textile manufacturing, chemical production, etc. (Hobbs 2000).

Some SMEs have already taken the lead in managing their own environmental and social impacts in a well-structured way. They have environmental management systems in place, report on their environmental and social performance, train and qualify their staff on environmental and social affairs and work in co-operation with other enterprises along the supply chain to reduce the environmental impacts of products and services. However, the majority of SMEs, especially those in developing countries and countries in transition, are still characterized by their lack of awareness of their own environmental and social impacts and their less structured management of such issues. Current policy approaches are not directed toward this majority, and support organizations fail to reach them. For the benefit of the environment and the wider societal context, SMEs still need to be engaged in the drive towards sustainability (Kuhndt and von Geibler 2002).

There is considerable discussion on the internal and external barriers SMEs face in doing so (Hillary 2000, Quentin 1998 and KPMG 1997). Most SMEs perceive environmental improvement as a costly burden. As they are primarily concerned with short-term economic survival, they are not motivated to ask for or use environmental information or support. SMEs often lack the time, information and money they need to improve matters. In addition, smaller manufacturing companies often do not have staff with sufficient environmental knowledge and expertise to be able to address problems and opportunities in the environmental field (UNEP 1997). Existing international environmental management schemes are often too complex for them to handle. Once an SME has started to implement an environmental management scheme, the process is frequently found to be unexpectedly expensive and is therefore often interrupted (van Weenen 1999).

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<sup>♦</sup> In this dissertation the abbreviation SMEs is used in different ways according to the specific context. In chapter 1, 2, 3 the term refers to small and medium enterprises in general, whereas in chapter 4, 5, 6, 7 the term is used as abbreviation for small manufacturing enterprises of which most are micro enterprises.

<sup>\*</sup> SMEs in EU are defined as enterprises whose employees are less or equal 249 and their annual turnover is less than 50million Euro. SMEs in Egypt are defined as enterprises whose employees are less or equal 100 there is no condition about the invested capital.

This thesis will focus on small manufacturing enterprises (SMEs) and the role they play in the field of sustainable regional development. The Governorate of Ismailia in Egypt will be selected as a case study. Thus the social, economic and environmental influences of SMEs in a region will be explained. Furthermore, these influences will be evaluated in terms of sustainable development, and the available opportunities and potential, which SMEs can use to achieve sustainable regional development goals, will be estimated.

### **1.1 Justification of the study (statement of the problem).**

Since the last two decades the Egyptian government has shifted its policy towards encouraging a more liberalized economy. Within a framework of a Structural Adjustment Program (SAP), advocated by the International Monetary Fund (IMF) and the World Bank. Policy reform has taken place to create a more favourable environment for the private sector, which is dominated by small enterprises. Under the SAP, various incentives have also been offered to the private sector to export. These include the removal of import quotas, lower tariffs and reform of the exchange rate. These adjustment policies (retrenchment of government employees, the cutting in government expenditures and the restructuring of public enterprises) have led to greater unemployment in the country. In this context, the Egyptian government has supported small enterprises to play an important role with their relatively labour intensive production in reducing the effects of adjustment by offering alternative employment opportunities.

The creation of SMEs is seen, by many governments and donor agencies, as the key to economic and social development. This recognition is based on the belief that small enterprises can potentially play a crucial role in enhancing entrepreneurship, creating more job opportunities relative to the capital invested, mobilizing local resources, catering for the basic needs of the population, and contributing to a more equitable distribution of wealth and income. The Egyptian government has seen one more potential for SMEs: SMEs can absorb a significant part of unemployment falling out from the general sector because of the reform policies to avoid several social and political problems for Egypt. So, SMEs in Egypt have got essential support which led to high rapid growth rate of these enterprises in the whole country without taking into consideration their effects on the environment. The great number of SMEs in Egypt has reached about one million enterprises, draws our attention to the danger of ignoring such enterprises or dropping them from the issue of the sustainable development agenda in Egypt. Thus, they may be regarded as a two edged weapon, i.e. they may be dangerous to the environment and may greatly influence the process of development.

In order to understand and promote small enterprises, several studies have been undertaken in developing countries. Amongst these studies, three major areas of focus can be identified. One group has focused on descriptive studies about the characteristics and the economic and social role of SMEs and their owners (a review of results of some of these studies can be found in Liedholm and Mead 1998 and Peter and Maya 2002). Such studies usually involve a survey of small enterprises and gather information about the number of enterprises, the employment equipment, and production, at a given point in time. The second group has tried to analyze the economic performance of the sector by testing the economic efficiency across a range of industries (such as in Tybout 2000 and Chowdhury and Wolf 2003). The third group has attempted to study the effectiveness of the assisting financial and non-financial institutions (see for example Timberg 1999 and United Nations 2001). The study of the effects of SMEs on the sustainable regional development is an area that has not received the attention it deserves, and consequently little is known about these enterprises and their influences on the environment.

Moreover, to devise a policy conducive to boosting the formation of enterprises and hence contributing to the overall economic development, there is a need to study the impacts of SMEs on the sustainable regional development. Policies cannot be effective without understanding the socio-economic and environmental effects of these enterprises on the regional development. The research will therefore provide an original focus on small manufacturing enterprises (SMEs) and their influences in the context of sustainable regional development in Egypt.

## **1.2 Objectives**

This research aims at understanding of small manufacturing enterprises (SMEs) in the context of developing countries, and their impacts on sustainable regional development, by exploring the socio-economic and environmental effects at the regional level. Moreover, the research attempts to assess the role of SMEs in job creation, one advantage often used to advocate the promotion of the SMEs sector as a means to achieve sustainable regional development, and to investigate how the existing policy will direct the development of these enterprises with the framework of environmental protection.

Finally based on the findings, lessons and conclusion will be drawn, and guidelines for policy formulation will be suggested. The study aims at contributing to the existing literature about SMEs and filling a gap that exists in the knowledge about them in developing countries and particularly in Egypt. Accordingly, this study has the following specific goals:

- 1- Study the effects of SMEs on the regional development in the framework of their leverage to activate regional and national chains of economic value-added, their ability to create job opportunities and their capability to generate suitable incomes at the enterprise and regional level.
- 2- Estimate the current urban, economic, social and environmental influences of small manufacturing enterprises in the study area in light of sustainable development concept.
- 3- Address economic, social and environmental constraints and obstacles which are limiting the contribution of SMEs in achieving sustainable regional development and formulate group of rules to solve them.
- 4- Discover the regional potentials which SMEs can use to maximize their contribution in achieving the sustainable regional development. Thus, SMEs can manufacture raw-materials in many cases, which are whether imported from abroad or brought from regional and national level. Also, SMEs can maximize their exploitation to work through clusters and networks which currently are used on the narrow range.

## **1.3 Research Questions**

The research in this thesis attempts to answer the following questions:

- 1- Given their present situation, are SMEs in Egypt capable of generating positive impacts on regional development? If so, what are these impacts?
- 2- What are the economic, social and environmental constraints that restrict the contribution of SMEs in sustainable regional development?
- 3- What potential exists to enhance the chances for SMEs to achieve sustainable regional development?



## **1.4 Hypotheses**

Based on the previous objectives and questions the following hypotheses are formulated:

- 1- SMEs have, in principle, a positive effect on the economic and social development of a region; as such, SMEs can begin to activate regional and national chains of economic added value, as well as create job opportunities with good incomes on a regional scale.
  
- 2- The effects of SMEs on sustainable regional development are at present time limited – with respect to particular branches within the manufacturing sector (i.e., industry types) and size, according to the following aspects:
  - a- SMEs can offer only a limited long-term development perspective due to their small capital resources, inconsistent supply and demand structures and high market risks.
  - b- SMEs basically provide jobs for low-qualified employees with low standards regarding suitable levels of social security insurance for employees and employment protection (i.e., safety on the job).
  - c- Production in SMEs is associated with high environmental risks due to the lack of environmental awareness present, the costs and know-how associated with environmentally-friendly production methods, as well as the absence of actual control mechanisms.
  
- 3- SMEs have a high potential to foster sustainable development within regions based upon the following aspects:
  - a- In many instances, SMEs have the opportunity to process local raw materials for use in local manufacturing production rather than importing already-processed materials from regional or national markets; however, SMEs are not utilizing such possibilities and potential adequately.
  - b- Many SMEs in the region have the potential to adopt regional cluster building and network strategies to improve their degree of efficiency; however, these entities do not currently utilize these strategies to the greatest extent possible.

## **1.5 Research methodology and data analysis**

In this research, a number of hypotheses have been developed aiming at explaining the role of SMEs in sustainable development in Egypt. To test these hypotheses, data about the characteristics of SMEs, policies directing their development and the socio-economic and environmental effects which were created by these enterprises are required. But data collection is always problematic, especially in developing countries where data are often unavailable, either inaccessible or unreliable. The methodological problems of surveys fall into two broad categories: from whom to collect the information and what appropriate methods could be used for collecting the data. This section will discuss in detail the used methodology, official sources of data, the selection of the study region and SMEs branches within the manufacturing sector, the questionnaire design, the sampling procedure and survey problems.

### **1.5.1 General approach**

To achieve the objectives of this research, an exploratory approach was adopted. This is justified because of the lack of available empirical and statistical information about SMEs in Egypt and the urgent need for gaining 'insight into the characteristics of these SMEs. This has resulted in reliance on the findings of other studies and previously established relationships developed elsewhere from which a number of hypotheses relevant to the Egyptian case were deduced to be tested in a field survey. The research is also analytical-descriptive in that it tests the relationships between the characteristics of SMEs and their impacts upon sustainable regional development.

In designing the research strategy the reliability and the validity of data and the simplicity and the appropriateness of the analytical techniques were key concerns. The empirical study is based upon the compilation of an inventory of SMEs in Egypt from secondary sources, and the use of a questionnaire in a field survey as a primary source. Secondary data were collected in a particular time period for two spatial tiers (the national and the regional) in an attempt to compare the same socio-economic indicators at the two levels. The questionnaire was administered with a representative sample of SMEs in one region in which information about the characteristics of SMEs, the entrepreneurs, the employees, and relationships with assisting institutions were collected. In addition, unstructured interviews with officials in institutions, experts, entrepreneurs and some inhabitants were conducted on problems, potentials and policies-related issues.

### **1.5.2 Official data sources of SMEs in Egypt**

Studying any phenomenon relies upon the existence and accessibility of a suitable data base. Data sources vary in their coverage, accuracy, degree of aggregation and accessibility. A survey seeking to study SMEs requires a list of the existing population of SMEs, from which a detailed list of them as a case study can be drawn. For the identification of the sample for the field survey purpose, the list has to include the name and the address of these enterprises.

Given the difficulties of getting access to official data at this detailed level and the often questioned accuracy of most of them, there is an increasing demand for researchers to collect their own data. Though it is convenient because it allows the collection and organization of data in the form required, it is a tedious and arduous task that requires enormous time and resources and should only be contemplated after all other possible sources of data have been tried and exhausted. In this section, the possible available data sources about SMEs in Egypt are identified and discussed. Also the justifications for the sources used in this study are given.

#### **1.5.2.1 Population census**

Since the start of the population census in 1882, it has been a source of considerable value. The census\* typically includes information about the population socio-economic characteristics and the stock of housing and enterprises. Fortunately, census data are often organized in a disaggregated way to provide information at various levels of the spatial hierarchy (national, regional, district, town/villages levels).

The censuses are a valuable source for socio-economic data of the population. This source has also a number of limitations. Based on the definition used (the population existing in a specific geographical area in a determined date and time), population censuses produced by CAPMAS (Central Agency for Public Mobilization and Statistics) provide data in a slice of time. No record is therefore available of changes over time. Therefore, the identification of SMEs established in a particular time period between censuses dates using this source is not possible. However, given the fact that this is the only source in Egypt from which socio-economic information at various spatial levels is available, and with its limitations in mind, the researcher used the socio-economic and enterprises data of the population census for the analysis.

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\* Censuses in Egypt are done every 10 years (1966 – 76 – 86 – 96, .....)

### **1.5.2.2 Local authority files**

Any enterprise carrying out any economic activity should seek permission of the Department of Engineering at the respective local authority unit before construction. A yearly fee is paid for each enterprise, and no change in the activity or in the design is permitted without the consent of the Engineering Department. Therefore, the department has records of all enterprises in its jurisdiction area. The record is unique as it provides data at the street level both in cities and villages of all kinds of economic enterprises (eg service enterprises, manufacturing enterprises, trading shops, etc.). As the data are compiled for collecting local authority fees, it includes only the name of the enterprise's owner, the type of the activity, the address, and the fees due. Nevertheless, it has a number of limitations that arise from its inaccessibility both physically and administratively.

Access to this data is subject to the permission of the Secretary General of the respective Region, which is in turn subject to the permission of the National Security Agency (after getting the permission of Central Agency of Public Mobilization and Statistics (CAPMAS)). Physical access is hampered because most of those files are kept in their respective local authority unit, and there is no one single body at either the regional or the national level that has a compilation of all files. For instance, in Egypt there are 928 local authority units (Wehda Mahalia), and getting data from all these units requires tremendous effort and indeed a long time, especially as these files are not allowed to be photocopied. Any researcher must write the information by himself from the files. Given these difficulties, it was impractical to use this source.

### **1.5.2.3 Social Fund for Development**

With the presidential decree number 40 for the year 1990, the Social Fund for Development (SFD) was founded in 1991 to promote the creation of new sustainable job opportunities for through small enterprises, and to encourage the large scale development of new small enterprises and strengthen existing ones. The Social Fund for Development is the entity competent with fostering the development of small and very small enterprises and with planning, coordination and promotion for their dissemination on a wide scale.

It also provides assistance in obtaining financing and other services in collaboration with the ministries, their organs and agencies, the public authorities, local government units and other entities. The Executive Regulations determine the Fund's system of operation in its fulfilment of its duties. The Social Fund for Development provides the small and the very small enterprises, either directly or through the experts whose services are rendered to the Fund, with the following services in particular<sup>1</sup>:

1. Definition of investment opportunities open and available in each governorate and in every area within them.
2. Preparation of preliminary feasibility studies of the projects offered to those who desire to establish them.
3. Providing consultancy about the best places and sources of purchase of machinery, equipment and other requirements.
4. Supplying the owners of the enterprises with a simplified guide to the quantitative and accounting registers and the instructions necessary for dealing with all public organizations.
5. Defining the risks to which the enterprises can be exposed.
6. Defining the local and international fairs and exhibitions and assisting in participation therein.

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<sup>1</sup> Review site: <http://www.sfdegypt.org/law.asp>, 18.12.2005.

7. Assisting in obtaining know-how and latest developments in production techniques and marketing.

This organization has very large information about the SMEs which are under its supervision. The available information, which can be given by the SFD, about SMEs includes the following: types of SMEs, the size of financial resources, which supports the enterprise, and the number of employees in supported SMEs. But the given information in this field is always at the national level, while the research needs this information in details to make the necessary analysis. Thus, the field survey is very important to get this detailed data. The social fund provides information regarding environmental conditions and regulations according to the type of SME which will be used in this research.

#### **1.5.2.4 Ministry of state of environmental affairs**

The last organization, which was contacted to get information about SMEs in Egypt and in the case study, is the Ministry of State for Environmental Affairs (MSEA). In June 1997, the responsibility of Egypt's first full time Minister of State for Environmental Affairs was assigned as stated in the Presidential Decree no.275/1997. From thereon, the new ministry has focused, in close collaboration with the national and international development partners, on defining environmental policies, setting priorities and implementing initiatives within a context of sustainable development.

According to the Law 4/1994 for the Protection of the Environment, the Egyptian Environmental Affairs Agency (EEAA) was restructured with the new mandate to substitute the institution initially established in 1982. At the central level, EEAA represents the executive arm of the Ministry. The most important principal functions of the Agency are:

- 1- Listing all enterprises, either small or big, according to their impacts on the environment.
- 2- Setting the standards and conditions to which applicants for construction projects must adhere before working on the site and throughout operations and
- 3- Setting the rates and proportions required for the permissible limits of pollution in terms of environmental safety and protection standards.

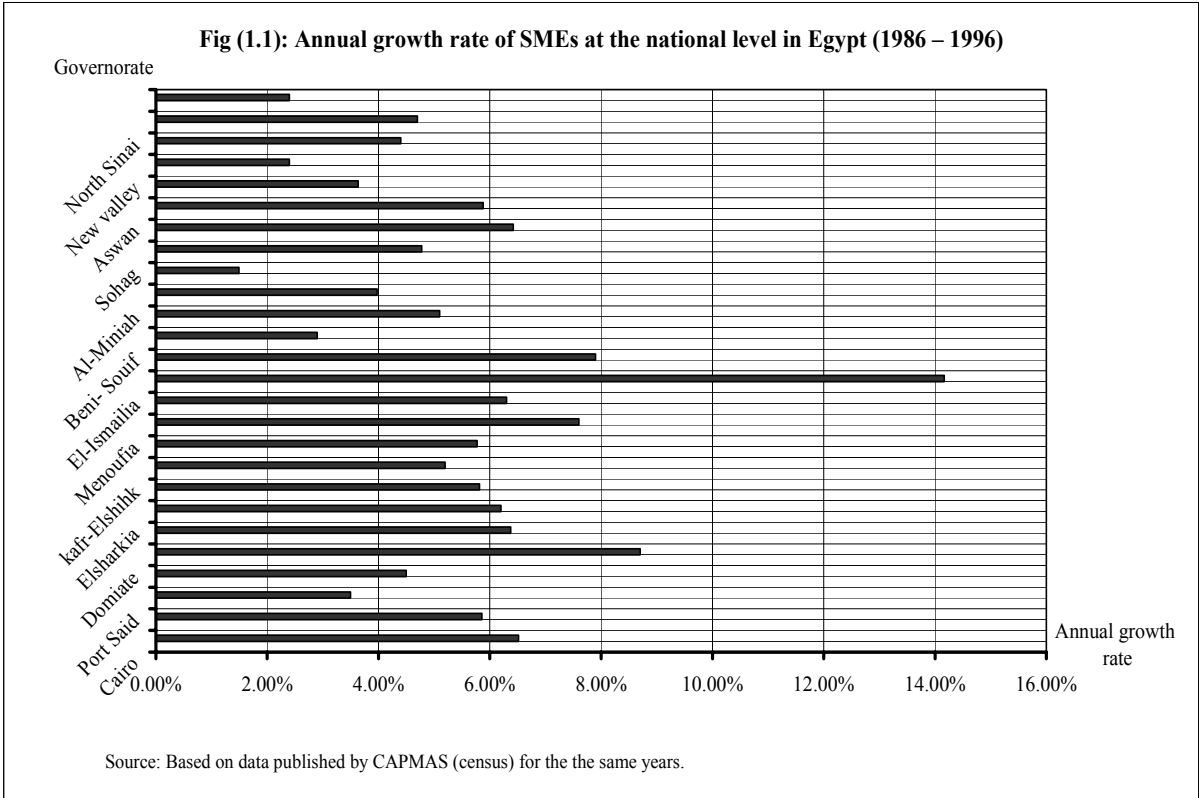
The EEAA has very important information about the environmental state of the registered enterprises in Egypt, but it considers this information very secret. So, it was very difficult to get data or announcements about the environmental situation of SMEs in the case study. But the other information about the environmental law, lists, conditions, standards and rates were available and the research used them to estimate the environmental state in the case study.

To conclude, data from all previous institutions do not contain information about the sources of finance, fixed and working capital, size and wages of labour, type and volume of products, sources and volume of raw materials, machineries, technology and energy requirements, production costs, manufacturing wastes, work protection, day of operations and characteristics of the work place of the small enterprise. Because this information is very important for this research to make the necessary analysis, the researcher had designed a questionnaire and field survey to get it.

#### **1.5.3 Study area and SMEs types' selection**

Our first aim was to study all SMEs of Egypt, but due to time and financial constraints, and the difficulties of collecting data in the sort of details ideally required by one single researcher, only one region was considered to be a relevant scale for studying the effects of SMEs in sustainable regional development. The selected region is Ismailia Governorate in Egypt.

Two reasons were behind this choice: First, Ismailia is the only one Governorate in Egypt, which had since 1995 a sustainable development strategy. Second, the Governorate of Ismailia obtained the highest growth rate in Egypt regarding the establishing of SMEs. Thus, the annual growth rate of the SMEs in Ismailia between 1986 and 1996 censuses reached 14.2% on average, and it is expected to increase in the census of 2006. Although, many researchers have pouted at Damietta as big leader the SMEs' field in Egypt it was in the second place with an annual growth rate of SMEs which did not reach 9%, while the general average of the growth rate of these enterprises at the national level stood at only 6%. See Fig. (1.1).

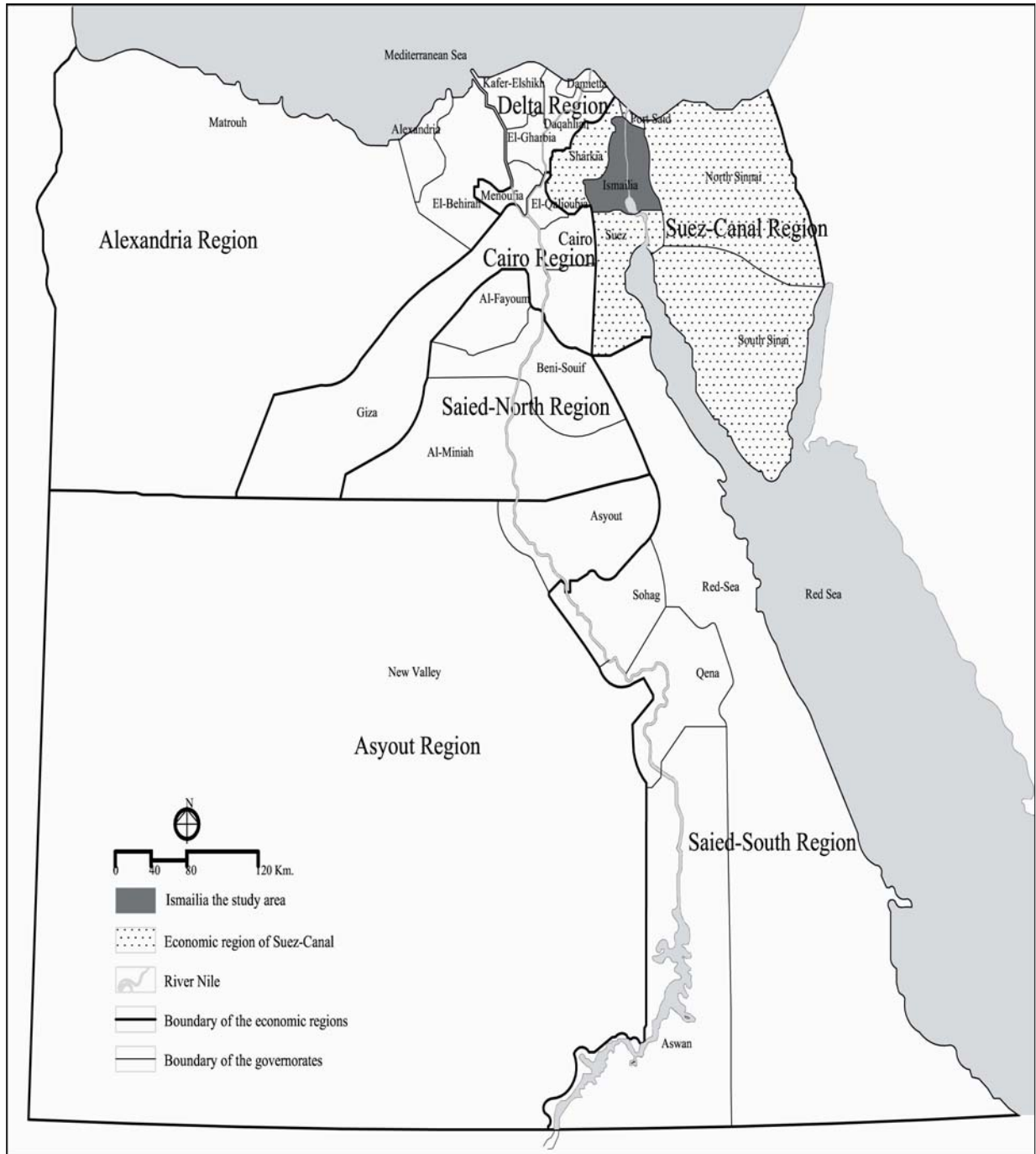


The Ismailia governorate is an administrative and political unit forming with five other governorates the Suez Canal Economic Region (Map1.1). It is not located far away from the three major manufacturing enclaves namely: Cairo, Suez, and Kalyoubia. Ismailia has a surface area of 4482.8 square kilometres (1067333.3 Feddans\*). It has a strip of Sinai with an area of 70Km long and 30Km deep along the east bank of the Suez Canal. There are two lakes in Ismailia; the first Lake of Timsah covers an area of 14 square kilometres and the second El-Morra Lakes cover an area of 234 square kilometres.

Ismailia is 10.20 meters above sea level. Its western border is the governorate of Sharkiah and its south – western border is Cairo governorate. To the north, the border is Manzala Lake in Port Said governorate. The eastern border is the North of Sinai governorate, and the southern border is the Suez governorate. Suez Canal and Temsah Lake move across Ismailia from the south to north. See (Map 1.2).

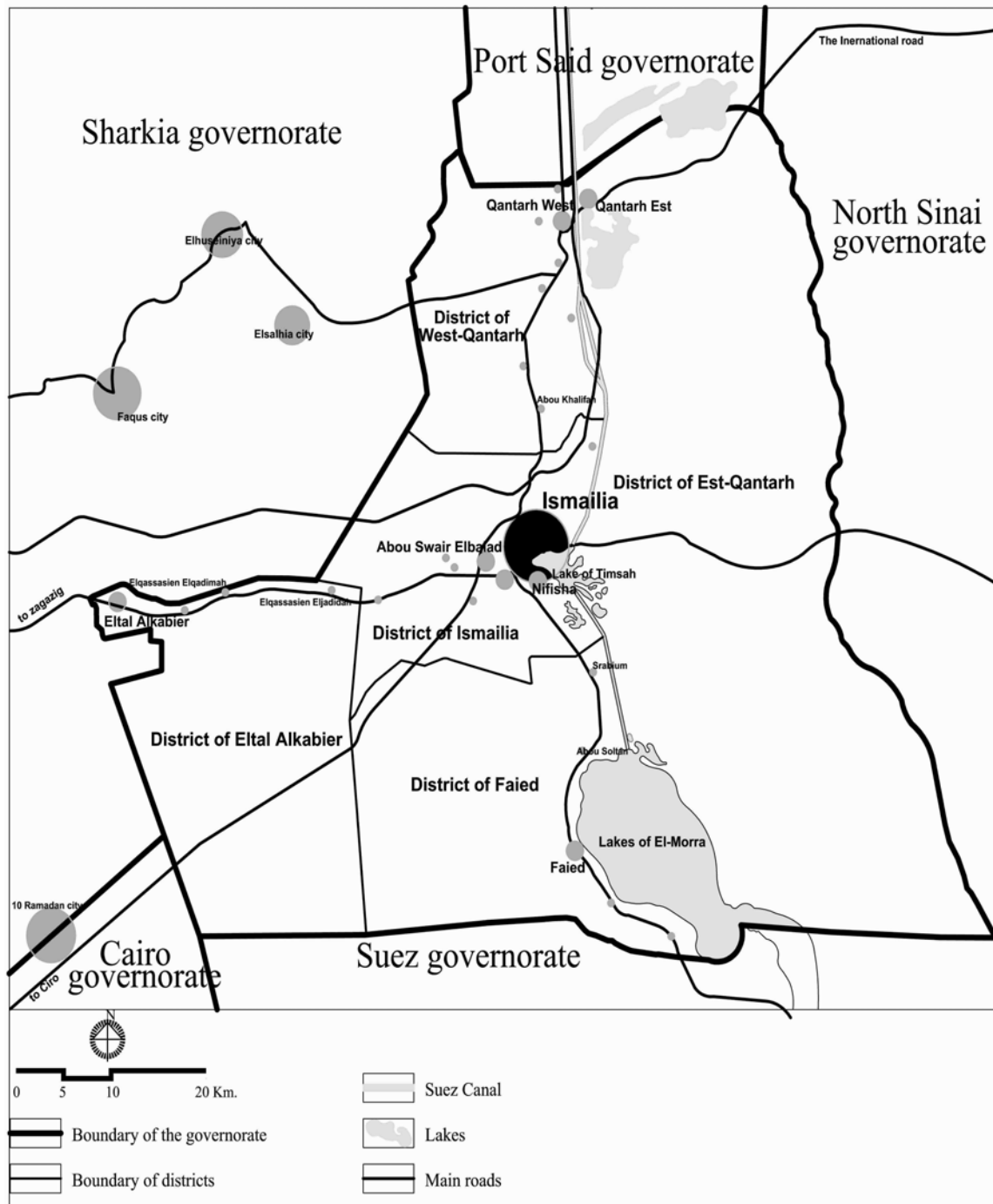
\* One Feddan = 4200.38 m<sup>2</sup>

**Map (1.1): The location of the Ismailia Region in Egypt**



Source: Adopted by the researcher based on General Authority for Urban Planning, See Web site: <http://www.gopp.gov.eg/world.asp>. 25.01.2006.

**Map (1.2): Ismailia the study area – General characteristics**



**Source:** Adopted by the researcher based on General Authority for Bridges and Roads 1987, General authority for Survey and Maps 1998, See Web site: <http://www.ismailya.gov.eg/Arabic/AR.Ismailia/takseem.htm>, 25.01.2006

Total population number in Ismailia the last census (1996) reached 714828 people (49.7% rural and 50.3% urban). It is expected to increase to 900000 people with an annual population growth rate of 2.33% in the next population census which will take place in 2006. Ismailia governorate is considered one of the most attractive governorates in Egypt for emigration, because of the available job opportunities in all of its economic sectors. Besides the cheerful and friendly nature of its people, Ismailia is bestowed with unique location, fine weather, marvellous beaches, beautiful gardens, charming landscapes, and certain ancient and modern monuments. The diversification of economic

activities is a distinct feature of Ismailia. In addition to agriculture and modern industries, a bright future awaits Ismailia governorate on the east bank of Suez Canal (the Sinai strip of the governorate), where big investments are expected in the fields of agriculture, industry and urban settlement.

Ismailia governorate is divided into 5 districts and 7 cities and 91 villages. The urbanization rate of Ismailia region can be inferred from the pattern of the distribution of population according to major economic activities. Table (1.1) compares the population distribution of the Ismailia Governorate and Egypt according to major economic activities. The data presented in the table show that less than 27% of the population are engaged in agriculture, hunting, and fishing activities compared to 31% in Egypt. Only 9% are working in the manufacturing, mining and quarrying sector compared to 14% at the national level. The percentage of employees in transport and communication sector in Ismailia is approximately twice bigger than those at the national level. The strategic position of Ismailia on the main road networks and axes (the International road - Cairo Ismailia road - Suez Port Said road - Suez Channel and Ismailia Alarish Road in north of Sinai) played an important role in this field. The rest is working in the remaining economic activities.

**Table (1.1): The distribution of population according to the economic activities 1996 – Comparison between Egypt and Ismailia governorate**

Economic activities	Ismailia		Egypt	
	Number of employees	Percentage	Number of employees	Percentage
<b>Agriculture</b>	55147	26.87	4880871	30.95
<b>Mining and Quarrying</b>	463	0.23	63670	0.40
<b>Manufacturing</b>	18308	8.92	2177437	13.81
<b>Electricity/Gas/Water</b>	4964	2.42	159374	1.01
<b>Construction</b>	20327	9.90	1282780	8.14
<b>Commerce/Restaurants</b>	21375	10.41	1639034	10.39
<b>Transport/Communication</b>	19455	9.48	916495	5.81
<b>Financing/Enterprises</b>	7566	3.69	708653	4.49
<b>Social Services</b>	56040	27.31	3766123	23.88
<b>Not defined</b>	1590	0.77	173778	1.10
<b>Total</b>	205235	100	15768215	100

**Source:** Adopted by the researcher based on enterprises data published by CAPMAS, annual statistics of the same years

According to the 1996 Population Census, the employees of Ismailia governorate was 219533 employees, representing about 30.7% of the total population in the region and about 1.3% of total employees in Egypt. The unemployment rate (computed as the difference between employees and employees) is about 7% compared with 9% at the national level.

Also, according to the Information Centre and Decision Support (ISDC) in Ismailia in the year 2002, there were about 3283 manufacturing enterprises in the region. The manufacturing sector is dominated by the private investors, mainly small size enterprises, representing more than 97.7% (3208) of the total number of enterprises, as shown in Table (1.2) and Fig (1.2). There are 15 types of SMEs in Ismailia but only 4 types represent 87.3% of all SMEs in the governorate. These 4 types are

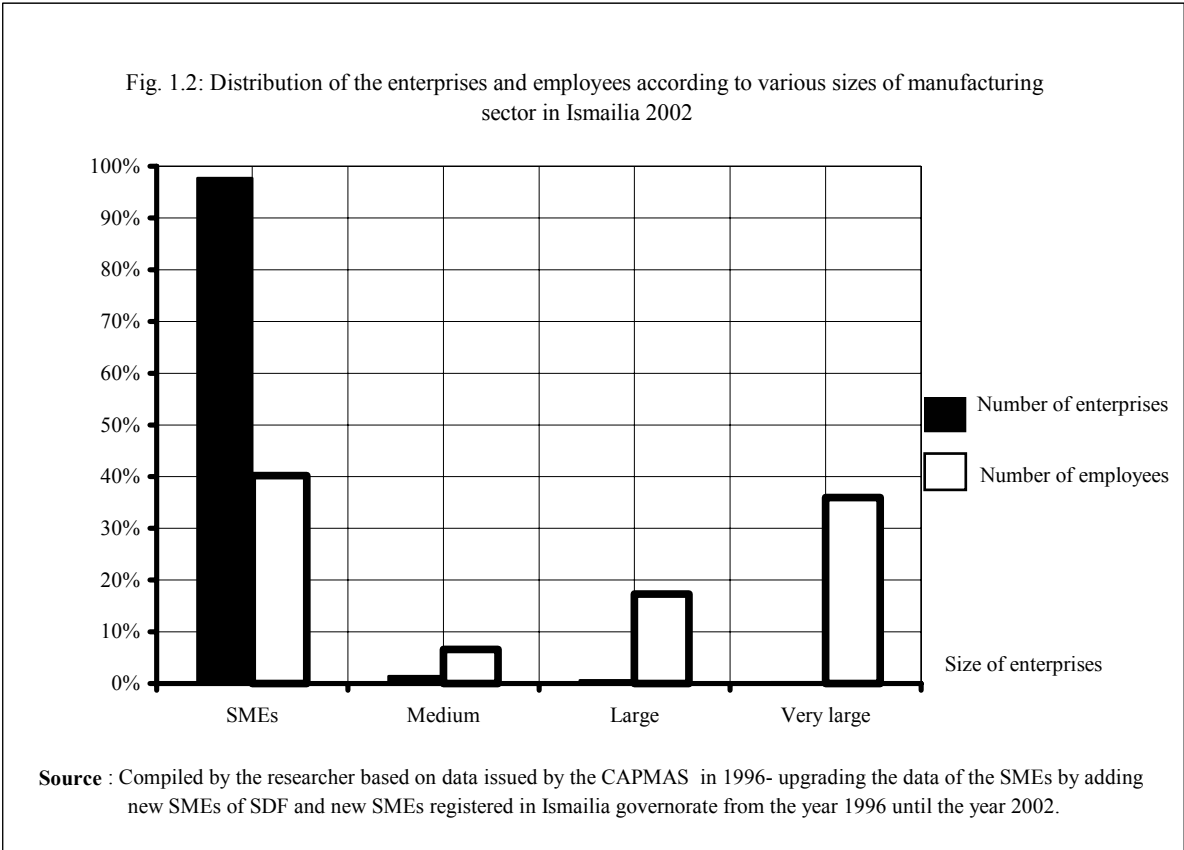


concentrated in food stuff and agricultural (17.3%), metal (14.1%), wood (34.9%), and textile, wearing apparel and dressing (21%), see Table (1.3) and Fig (1.3).

**Table (1.2): Distribution of the employees and the enterprises according to various sizes of manufacturing sector in Ismailia 2002**

Size of enterprises	Enterprises		Employees	
	Number	Percentage	Number	Percentage
Small < 20	3208	97.72	11394	40.22
Medium < 100	46	1.40	1865	6.58
Large enterprises < 500	21	0.64	4891	17.27
Very large enterprises > 500	8	0.24	10176	35.92
<b>Total</b>	<b>3283</b>	<b>100</b>	<b>28326</b>	<b>100</b>

Source : Compiled by the researcher based on data issued by the CAPMAS in 1996- upgrading the data of the SMEs by adding new SMEs of SDF and new SMEs registered in Ismailia governorate from the year 1996 until the year 2002.



#### 1.5.4 Sampling procedure

Ideally, all SMEs in all settlements of Ismailia would have been surveyed. However, given the limited resources available, it was imperative to restrict the size of the survey to a limited number of settlements from which a sample could be drawn. In addition to the manageability reason, the selection of these settlements was also based on the consideration that the settlements should reflect high significant levels of the concentration-location of SMEs.

The determination of the sample size has always been a problem that any researcher has to contend with. It depends upon the phenomenon under study, level of precision desired from the analysis and the type of analysis. Where higher level of accuracy is necessary, a large sample size is required. Two samples have been drawn for this study. One sample includes 101 enterprises out from 2800 (the allowable size of sample should be not less than 97) while the other encompasses 100 employees out of 9720 (the allowable size of sample should be not less than 99). The size of both two samples will, according to (Israel 1992), give results with level of precision  $\pm 10\%$  with a confidence Level of 95%, (See Table 1.4). This sample size was determined to ensure that the characteristics of SMEs and their employees were adequately investigated and to allow in general a significant statistical conclusion to be drawn. The enterprises and the employees were then stratified according to the distribution of the total number and types of enterprises in the settlements, urban and rural areas in each district/city. A simple random stratified sampling technique was used in the selection of the enterprises from the list.

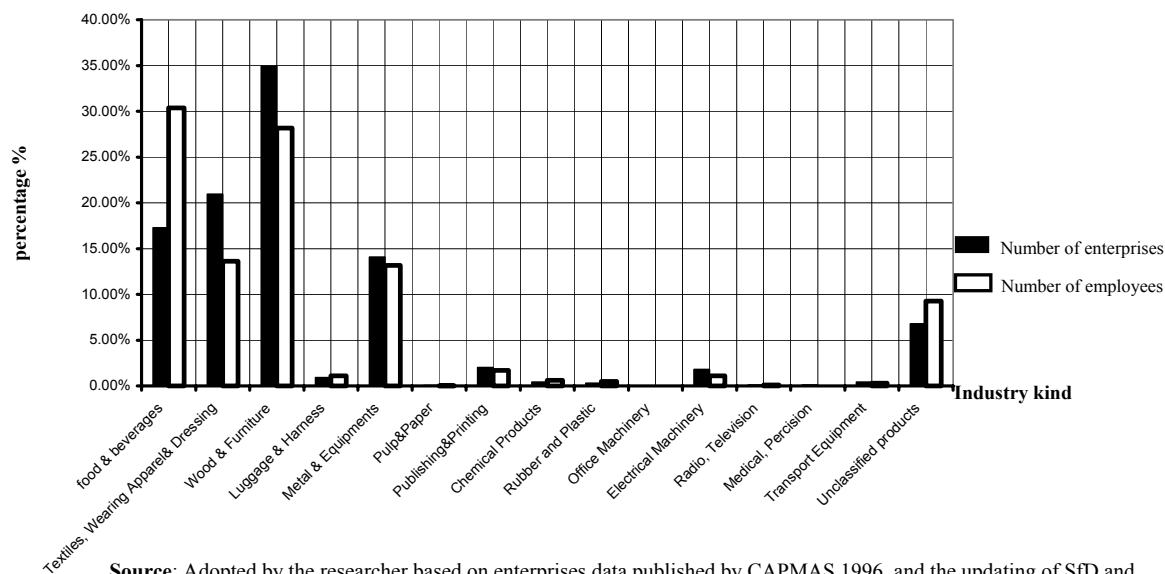
**Table (1.3): Distribution of small enterprises and their employees according to branches of SMEs in Ismailia governorate 2002**

Kind of SMEs	Enterprises		Employees	
	Number	Percentage	Number	Percentage
<b>Food &amp; beverages</b>	<b>554</b>	<b>17.27</b>	<b>3459</b>	<b>30.36</b>
<b>Textiles, Wearing Apparel&amp; Dressing</b>	<b>674</b>	<b>20.95</b>	<b>1550</b>	<b>13.60</b>
<b>Wood &amp; Furniture</b>	<b>1120</b>	<b>34.92</b>	<b>3210</b>	<b>28.17</b>
<b>Luggage &amp; Harness</b>	29	0.90	125	1.10
<b>Metal &amp; Equipments</b>	<b>452</b>	<b>14.06</b>	<b>1501</b>	<b>13.17</b>
<b>Pulp &amp; Paper</b>	1	0.04	3	0.03
<b>Publishing &amp; Printing</b>	64	2.00	195	1.70
<b>Chemical Products</b>	12	0.40	68	0.60
<b>Rubber and Plastic</b>	9	0.30	57	0.50
<b>Office Machinery</b>	0	0.00	0	0.00
<b>Electrical Machinery</b>	57	1.80	125	1.10
<b>Radio, Television</b>	3	0.10	11	0.10
<b>Medical, Precision</b>	3	0.10	0	0.00
<b>Transport Equipment</b>	13	0.40	34	0.30
<b>Unclassified products</b>	217	6.76	1056	9.27
<b>Total</b>	<b>3208</b>	<b>100</b>	<b>11394</b>	<b>100</b>

Source: Adopted by the researcher based on enterprises data published by CAPMAS 1996, and the updating of SFD and ICDS of Ismailia 2002.

 The selected 4 sectors

**Fig (1.3): Distribution of small enterprises and their employees according to branches of SMEs in Ismailia governorate 2002**



Source: Adopted by the researcher based on enterprises data published by CAPMAS 1996, and the updating of SfD and ICDS of Ismailia 2002.

Only 10 settlements and districts were selected and about 21 settlements, which did not have significant concentration of the selected types of SMEs, were ignored. Table (1.5) and Map (1.3) show the distribution of the sample size according to type of SMEs and selected locations.

**Table (1.4): Sample size for  $\pm 3\%$ ,  $\pm 5\%$ ,  $\pm 7\%$  and  $\pm 10\%$  Precision Levels Where Confidence Level is 95%**

Population	$\pm 3\%$	$\pm 5\%$	$\pm 7\%$	$\pm 10\%$
500	a	222	145	83
600	a	240	152	86
700	a	255	158	88
800	a	267	163	89
900	a	277	166	90
1,000	a	286	169	91
2,000	714	333	185	95
3,000	811	353	191	97
4,000	870	364	194	98
5,000	909	370	196	98
6,000	938	375	197	98
7,000	959	378	198	99
8,000	976	381	199	99
9,000	989	383	200	99
10,000	1,000	385	200	99
15,000	1,034	390	201	99
20,000	1,053	392	204	100
25,000	1,064	394	204	100
50,000	1,087	397	204	100
100,000	1,099	398	204	100
>100,000	1,111	400	204	100

a = Assumption of normal population is poor (Yamane, 1967). The entire population should be sampled.


Source: Israel, G. D., Sampling the evidence of Extension program impact. Fact Sheet PEOD-5, Institute of Food and Agricultural Sciences, University of Florida, 1992.

**Table (1.5): The distribution of the samples (Establishments and employees ) according to type of SMEs and selected locations**

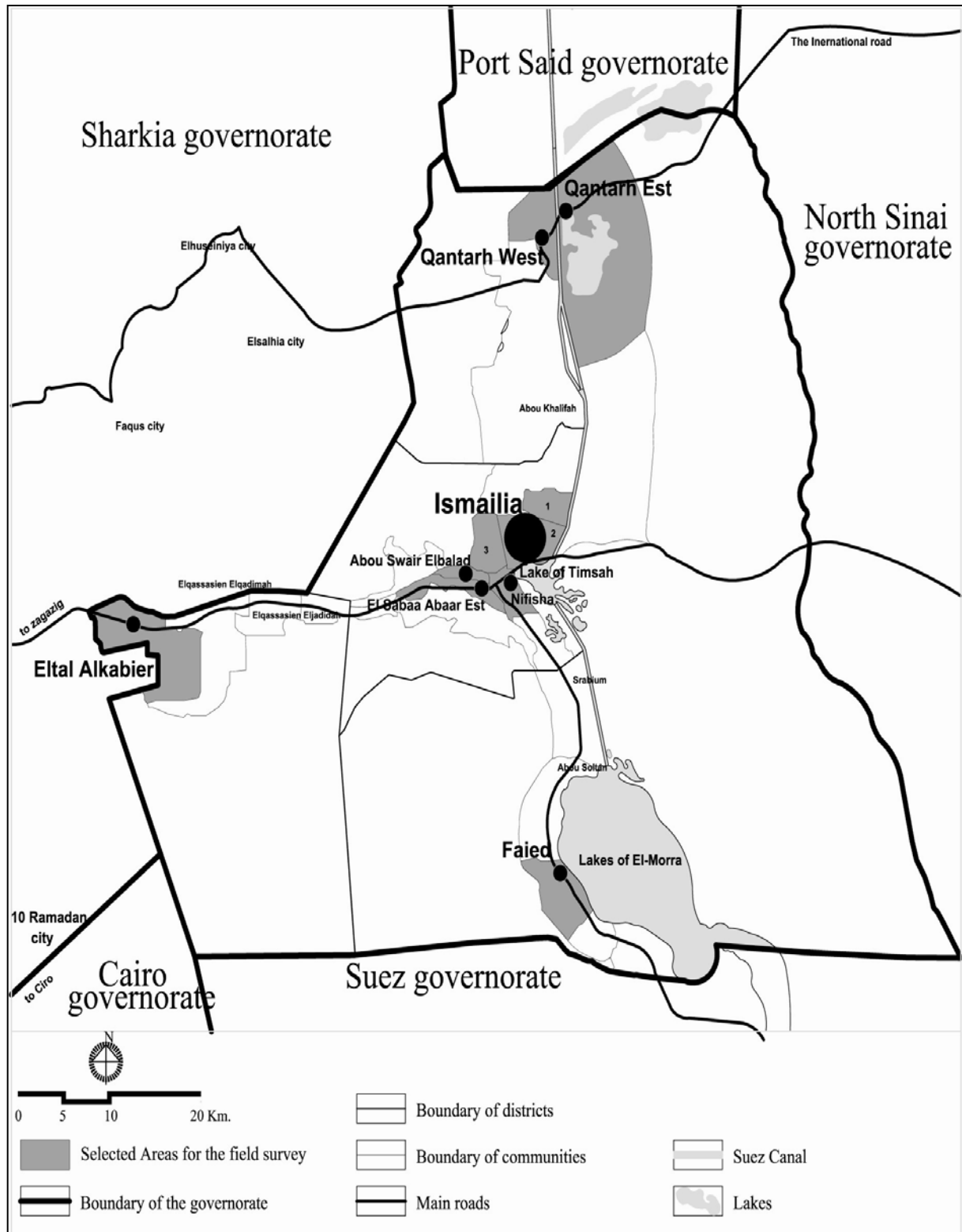
District / City / Village	wood industry						Metal & Equipments						food & beverages						Textiles, Wearing Apparel & Dressing						TNE	T.SE	TNemp	T.SW
	enterprise s			Employees			enterprise s			Employees			enterprise s			Employees			enterprise s			Employees						
	No.	%	SZ.	N.	%	SZ.	No.	%	SZ.	No.	%	SZ.	No.	%	SZ.	No.	%	SZ.	No.	%	SZ.	No.	%	SZ.				
Ismailia 1	46	4	2	247	8	3	35	8	2	228	15	3	49	9	2	174	5	2	98	15	4	232	15	3	228	10	881	11
Ismailia 2	435	39	18	1323	41	16	110	24	4	317	21	4	139	25	7	892	26	11	167	25	7	387	25	5	851	36	2919	36
Ismailia 3	27	2	1	81	3	1	0	0	i	0	0	i	28	5	1	161	5	2	3	0	i	14	1	i	58	2	256	3
Ein Ghosien	10	1	i	23	1	i	3	1	i	11	1	i	4	1	i	30	1	i	5	1	i	11	1	i	22	i	75	i
Nifisha	48	4	2	163	5	2	26	6	1	165	11	2	32	6	1	161	5	2	27	4	1	77	5	1	133	5	566	7
El Sabaa Abaar Est	44	4	2	81	3	1	21	5	1	83	6	i	26	5	1	324	9	4	24	4	1	80	5	1	115	5	568	6
El Sabaa Abaar west	10	1	i	22	1	i	3	1	i	10	1	i	4	1	i	35	1	i	5	1	i	11	1	i	22	i	78	i
Elmanaif	7	1	i	17	1	i	2	1	i	8	1	i	3	1	i	18	1	i	4	1	i	8	1	i	16	i	51	i
Abou Swair Balad	52	5	2	84	3	1	24	5	1	78	5	1	23	4	1	322	9	4	38	6	2	82	5	1	137	6	566	7
Abou Swair Mahatta	12	1	i	32	1	i	5	1	i	15	1	i	6	1	i	35	1	i	7	1	i	16	1	i	30	i	98	i
Elmahsamah Eljadidah	7	1	i	17	1	i	2	1	i	8	1	i	3	1	i	18	1	i	4	1	i	8	1	i	16	i	51	i
Eldabaa	6	1	i	17	1	i	2	1	i	8	1	i	3	1	i	18	1	i	3	1	i	8	1	i	14	i	51	i
Eltal Alkabier	87	8	4	166	5	2	59	13	3	151	10	2	87	16	3	244	7	3	100	15	4	160	10	2	333	14	721	9
Elourien Aljadidah	13	1	i	46	1	i	6	1	i	22	1	i	7	1	i	46	1	i	10	1	i	22	1	i	36	i	136	i
Elqassasien Elqadimah	13	1	i	48	1	i	7	2	i	23	2	i	8	2	i	46	1	i	10	2	i	23	1	i	38	i	140	i
Elqassasien Aljadidah	8	1	i	21	1	i	3	1	i	10	1	i	4	1	i	23	1	i	4	1	i	10	1	i	19	i	64	i
Elmahsamah Elqadimah	10	1	i	30	1	i	4	1	i	14	1	i	5	1	i	32	1	i	6	1	i	14	1	i	25	i	90	i
Faied	121	11	5	334	10	4	67	15	3	156	10	2	43	8	2	410	12	5	69	10	3	84	5	1	300	13	984	12
Fanara	10	1	i	28	1	i	4	1	i	13	1	i	5	1	i	30	1	i	6	1	i	14	1	i	25	i	85	i
Abou Soltan	12	1	i	32	1	i	4	1	i	15	1	i	5	1	i	34	1	i	7	1	i	15	1	i	28	i	96	i
Sarabium	13	1	i	38	1	i	5	1	i	18	1	i	6	1	i	41	1	i	8	1	i	18	1	i	32	i	115	i
Qantarah West	75	7	3	160	5	2	35	8	2	73	5	1	31	6	1	173	5	2	39	6	2	156	10	2	180	8	562	7
Abou Khalifah	13	1	i	48	1	i	7	2	i	22	1	i	8	1	i	53	2	i	9	1	i	23	1	i	37	i	146	i
Elbanahauh	4	0	i	9	0	i	1	0	i	4	0	i	1	0	i	9	0	i	2	0	i	4	0	i	8	i	26	i
Elreiah	7	1	i	18	1	i	3	1	i	9	1	i	3	1	i	20	1	i	4	1	i	9	1	i	17	i	56	i
Elakharsa	4	0	i	8	0	i	1	0	i	4	0	i	1	0	i	9	0	i	2	0	i	4	0	i	8	i	25	i
Elbeideih	3	0	i	8	0	i	1	0	i	4	0	i	1	0	i	9	0	i	2	0	i	4	0	i	7	i	25	i
Qantarah Est	17	2	1	88	3	1	9	2	i	25	2	i	17	3	1	79	2	1	9	1	i	45	3	i	52	2	237	2
Gelbanah	1	0	i	3	0	0	0	0	i	0	0	i	0	0	i	0	0	i	0	0	i	0	0	i	1	i	3	i
Eltaqadom	1	0	i	3	0	0	0	0	i	0	0	i	0	0	i	0	0	i	0	0	i	0	0	i	1	i	3	i
Alabtall	4	0	i	14	0	0	2	0	i	8	1	i	2	0	i	14	0	i	3	0	i	9	1	i	11	i	45	i
<b>Total</b>	<b>1120</b>	<b>100</b>	<b>40</b>	<b>3210</b>	<b>100</b>	<b>33</b>	<b>452</b>	<b>1</b>	<b>17</b>	<b>1501</b>	<b>1</b>	<b>15</b>	<b>554</b>	<b>1</b>	<b>20</b>	<b>3459</b>	<b>1</b>	<b>36</b>	<b>674</b>	<b>1</b>	<b>24</b>	<b>1550</b>	<b>1</b>	<b>16</b>	<b>2800</b>	<b>101</b>	<b>9719</b>	<b>100</b>

i = ignored, No. = Number, SZ= Sample size, TNE= Total number of Enterprise s, TNemp= Total number of employees

Source: Adopted by the researcher based on enterprises data published by CAPMAS 1996, and the updating of SfD and ICDS of Ismailia 2002.

 The selected districts, cities and villages

**Map (1.3): The administrative districts and communities of the Ismailia Region and the Selected Areas for the field survey**



Source: Adopted by the researcher based on General Authority for Bridges and Roads 1987 and General authority for Survey and Maps 1998, See Web site: <http://www.ismailya.gov.eg/Arabic/AR.Ismailia/takseem.htm>

## 1.5.4 Questionnaire design and survey method

### 1.5.4.1 Questionnaire design

Field survey questionnaire was the tool used for gathering information from the SMEs in the Ismailia region. The order of questions and the design of the questionnaire are crucial because they have a bearing upon the response rate of the survey (Moser and Kalton 1971). Also, the subject and the length of the questions should be considered carefully. In the design of the questionnaire, much care was given to the wording which needed to be direct, simple and familiar to the respondents. Genuine efforts were also made to keep the questionnaire as short as possible.

For purpose of this study and to get actual data about the characteristics of SMEs and their employees, two questionnaires were designed, one for entrepreneurs and another for employees. The framing of the two questionnaires was designed to be clear and coherent. Using structured interview method, the interviewed entrepreneurs or employees were allowed to move smoothly from one step to another without interruption or extra effort. The entrepreneurs' questionnaire is divided into 5 main topics:

1- Questions concerning the general characteristics of SMEs. 2- Questions concerning the economic characteristics of SMEs. 3- Questions concerning the social characteristics of SMEs. 4- Questions concerning the environmental characteristics of SMEs. 5- The problems facing SME towards sustainability (See appendix A1.1 for the design of the questionnaire).

The employees' questionnaire was in order to estimate the effects of SMEs on the living standard and the quality of life of employees and their families. The questions were also arranged into 5 main topics:

1- Questions concerning the education of the members of the family. 2- Questions concerning the family status (single, married.....etc.). 3- Questions concerning employees and unemployment in the family. 4- Questions concerning the adequate shelter of the family. 5- Questions concerning the current economic status of the family in relation to the work of the head of the family in a SME (See appendix A1.2 for the design of the questionnaire).

With this second questionnaire, the effects of the SMEs on the living standard of employees and their families in comparison with the general standard of living in the governorate of Ismailia and within Egypt as a whole can be estimated. In addition we can determine whether the employees incomes gained from working in SMEs are sufficient to achieve quality of life and to get adequate housing conditions.

Both open-ended and closed questions were utilized in the questionnaire. The preferability of open-ended question is debatable and depends on the content of the question, the type of respondents and the method of administering the questionnaire. Nevertheless, open-ended questions are difficult because they require a great deal of effort and time to develop a coding system which represents all responses without bias. On the other hand, closed questions could be criticized because they reflect the understanding and the knowledge of the researcher rather than that of the respondents, and hence might influence their responses. However, the pilot survey and the testing of the questionnaire in the field have helped in avoiding these limitations. Also, by using the "other" option, room for unanticipated responses has been created.

Nevertheless, in administering the questionnaire, and in order to avoid influencing the answers, the interviewers were asked not to mention the various possible answers listed unless they found that the respondents were unable to answer. This gave the respondents the freedom to give their answers without being influenced by suggested responses (see appendix (A1) for the design of the questionnaire).

As mentioned, a pilot survey was undertaken to test the questionnaire design and to help in the final arrangement of the implementation of the actual survey. The pilot survey was also useful in establishing the reliability and the validity of the measures used.

Based on the pilot survey few modifications were made. First, there was a need for modifying some questions; especially those related to the environmental characteristics of SME. For instance, the question asking the entrepreneurs to classify the wastes of SME according to the size and the type in details was dropped due to the difficulties observed among entrepreneurs to order them. The question became the size of total waste from the used main raw-material. Also, the question investigating the profit value of SME in the year was cancelled, after realizing the uneasiness of most entrepreneurs towards answering this question. The researcher has obtained the information about this profit indirectly by the calculation of the difference between the costs of the production processes and the price of the end products in considering the rate of marketing of these products.

Second, the pilot survey helped in modifying and improving the way in which the entrepreneurs would be introduced to the objectives of the survey and the strategies used to get all questions answered. This included the language, the ordering of questions, and the timing of the interviews. Third, the pilot survey clarified logistic matters related to the administration of the questionnaire such as the man-hours, and personnel and equipment required for assistance.

#### **1.5.4.2 Administering the questionnaire**

Face-to-face interview was the method used in administering the questionnaire. This method was selected because it is considered a flexible way for manoeuvre, and to establish a relation with the respondents. Moreover, face to face interview often yields a higher response rate than other alternative methods such as the telephone and mail which are unreliable, especially in Egypt, due to the poor telephone and mail service on the one hand, and the expected unwillingness of the entrepreneurs to respond positively to any questionnaire sent by mail, on the other hand. However, this it has a number of disadvantages that stem from the inevitable bias, such as the incomplete recording, the misinterpretation of the responses, and the reactive effects of the interviewers.

Because of the delay in obtaining the Regional Authority's permission to conduct the survey, the researcher could not introduce the research objectives to entrepreneurs beforehand through local key persons and institutions. Therefore, extra efforts and time had to be spent with every firm to overcome this problem.

A number of field assistants were recruited to administer the questionnaire. Needless to say that, the quality of the interviewers is of obvious importance in a field survey. At first, the intention was to recruit them from the employees of the local planning office. This was intended to eliminate, or at least reduce, the suspicion of the entrepreneurs, and to ensure that a minimum required acquaintance to the area was available. But the delay in taking the permission of the Regional Authority, once again, made this plan impossible. Therefore, it was deemed necessary to ask the help of new graduates of the

Faculty of Regional and Urban Planning at the University of Cairo. At first five, graduates were selected. After briefing them on the research objectives and the different parts of the questionnaire, every one had to fill in few questionnaires. This helped in assessing their understanding of the questionnaire and ability to administer it. After this exercise only two were selected in addition to the researcher himself. The interviewers were asked to follow as close as possible the wording and the order of questions.

The sampling unit in the study consisted of the SMEs and the questionnaire had to be filled in from the firm's founder who is the only one who can answer retrospective questions about the socio-economic and environmental characteristics and problems facing the SME. When the SME had more than one owner, the questionnaire was filled in from the managing owner.

Interviewing time took, on average, 30 to 45 minutes. This was found to be sufficient time to build a relationship with the entrepreneurs. Also, it provided enough time for occasional interruptions. Within this time frame, it was possible for the interviewers to administer about five questionnaires a day, allowing enough time for moving from one firm to another. This ceiling was deliberately maintained; firstly, to avoid the boredom that would inevitably be felt from repeating the questionnaire several times; and secondly, to ensure the full accomplishment of the questionnaire.

Despite the efforts made to reduce as much as possible the problems of field survey, a number of unanticipated difficulties were found. These will be discussed with other survey problems in the ensuing section.

### 1.5.5 Data analysis

The used method in this research to classify and to analyze the SMEs according to their effects on sustainable regional development depends on both quantitative and qualitative studies. The SMEs will be divided into groups according to their implementation level for the concept of sustainable regional development. This means the SMEs in the study area will be divided into several groups. Some group(s) will be close to the concept of sustainable development, other group(s) will be further away from the concept of sustainable regional development and other group(s) will be in between.

This research has used the descriptive statistics approach to analyze the data generally. Two measures of central tendency were used to treat these data. First is the Mid-Rang, it also called Mid-extremes. This measure is defined as the average of the smallest and largest observations in a set of data.

By  $N$  Data ( $Y_1 = \min_j X_j, Y_2, \dots, Y_{N-1}, Y_N = \max_j X_j$ ) the formula of the Midrange is<sup>2</sup>:

$$MR \equiv \frac{1}{2}(Y_1 + Y_N)$$

This measure is very sensitive for the extreme values in the samples and ignores most of the values of the distribution. It is not stable because the change in the minimum or the maximum can lead to a large change in midrange. So the use of this measure to get the middle or the centre of a distribution will not be accurate. The use of this measure to distribute and to arrange the data set in into different groups according to each sustainable indicator will be more successful than other measures; because it isolates the extreme values in the sample and prevent them from have big effects on these groups.

<sup>2</sup> Vgl.: <http://barolo.ipc.uni-tuebingen.de/pharma/2/2.1/mittelwert.html>, 24.07.2004.



The most common measure of central tendency is the mean; the mean is the arithmetic average of a set of numbers. The mean is a particularly informative measure of the "central tendency" of the variable if it is reported along with its confidence intervals. The width of the confidence interval depends on the sample size and on the variation of data values. The larger the sample size, the more reliable its mean. The mean can be found by dividing the sum of the scores by the number of scores. By  $n$  scores  $x_i$  the formula of the Mean is:<sup>3</sup>

$$(\mu) = \frac{\sum_{i=1}^n x_i}{n}$$

This measure gives only one value representing the whole data set in terms of each variable. So the use of this measure helps to make all necessary comparisons between the situation in the study area and the situation at the regional and national level regarding the same indicators and variables in each level.

### **1.5.6 Survey problems**

Data collection phase is a long and tedious clerical exercise particularly when the collection demands the gathering of materials from the field. During the course of the survey certain unseen problems arose. Most of these problems were related to the data provided by the Information centres of the districts of Ismailia Governorate and the nature of a field survey in Egypt.

#### **1.5.6.1 Problems related to the data set**

Some addresses were not properly written which led to greater difficulties in locating enterprises. In several cases, it was found that enterprises were registered under different owners' names (for example the name of the wife), which were not publicly known. As a result, a lot of confusion was created when these enterprises were found and different names were given. The resulting confusion and suspicion led, in some cases, to the cancellation of the interview. Therefore, more time was spent in allocating the sample in the field. These deficiencies in the data set entangled the survey process and caused serious delays.

SMEs have to renew their registration every five years. This means that SMEs which have gone out of enterprises during this period might be still officially considered as being operating. However, this can be easily avoided if there is a cooperation between local authorities (The Engineering Department) and the manufacturing registrar at various administrative levels. Most SMEs notify the local authorities when closing down to avoid paying the annual fees. However, all attempts to identify these enterprises failed since no records about closure are kept. Only SMEs that fail to renew their registration in the General Organization for Industrialization (GOFI) are deleted from the files and are considered closed.

#### **1.5.6.2 Problems related to the field work activities**

During the field work the following problems were identified:

First, bureaucratic and red-tape procedures and permissions which can take a long time had substantially hampered the data collection. Most of these steps must be done consecutively and in order. Therefore, there is no way to apply for all permissions simultaneously.

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<sup>3</sup> Vgl.: <http://barolo.ipc.uni-tuebingen.de/pharma/2/2.1/mittelwert.html>, 24.07.2004.

Second, many parts of Egyptian cities have no clear signs or street names or numbers, and this made reaching new small (hidden) SMEs very difficult indeed. On several occasions, the interviewers failed to reach the address mentioned in the list. This might be ascribed to the possibility that some enterprises do not register the complete address, or to the error that might have occurred in handling the data.

Third, there exists some kind of unexplained reluctance among entrepreneurs of small enterprises. This can be very problematic. For example, one entrepreneur refused to continue the questionnaire and insisted to know how we got to identify him amongst others, and because of his suspicions and irritation, the interview was cancelled. In other cases, entrepreneurs refused to meet the interviewers either on the ground of suspicion or the lack of time.

Some of the entrepreneurs claimed that they are busy and asked the interviewers to leave the questionnaire and come and collect it after one or two weeks, probably to consult their accountants or lawyers or friends. The consequence was that the interviewers had to visit the enterprises more than once to remind the entrepreneur and finally to collect the questionnaire. To avoid the misinterpretation of the answers, the questionnaires had to be thoroughly revised with them.

#### **1.5.7 Institutional survey**

Data collection also included conducting an unstructured interview with officials and experts in technical and financial institutions supporting SMEs in Egypt. Prior arrangement had to be made with those officials in the relevant organizations and necessary permissions had to be taken beforehand. The aim of the survey was to detail out the role and the services offered by these institutions to support the enterprise of SMEs in terms of financial and technical support to help these enterprises achieving sustainable development objectives.

Notes were first written down during the interview and then a full reporting of the interview and the results was finalized in the office. The technical and financial institutions identified and interviewed in the field survey were: Offices of Local Development in Ismailia Governorate, the General Organization of Industrialization, the Organization of Handicraft and Manufacturing Products Cooperative, Arab Foundation for Small Enterprise Development, Ein-Shams University: Centre for Small Scale Manufacturing Development, Centre for Engineering and Industrial Design Development, and the social Fund for development in Egypt.

The time used in the interview was flexible, and ranged from 45 minutes to one and half hours including the occasional interruption related to official work. Generally, the interview with officials was successful and achieved its objectives.

#### **1.6 Organization of the thesis**

The thesis consists of seven chapters, covering in a logical way several relevant themes and notions related to the characteristics of SMEs and their impacts on sustainable regional development in developing countries especially in Egypt. The first section (from chapter one to chapter three) consists of the introduction and the conceptual framework within which the thesis is discussed. Thus, the Justification of the thesis, objectives, research questions and hypotheses developed are discussed in this chapter. Chapter one deals with the research methodology, data analysis, sources of data and difficulties in addition of compiling an inventory of small manufacturing enterprises in Egypt, questionnaire design and survey method and problems of data collection.

Chapter two discusses the concept of SMEs world-wide and particularly in Egypt, in order to give a concrete definition of the SMEs, which will be used in the empirical part of this study. Also, the potentials and the problems facing SMEs in terms of sustainable regional development, as well as the difference between SMEs and other sizes of enterprises are likewise discussed in this chapter. In order to identify correctly the situation of the SMEs and their significant contribution to the regional development in Egypt, general overview and historical background of SMEs in the national economy of Egypt are illuminated and reviewed. The relationship between SMEs and sustainable urban and regional development is highlighted in chapter three. This relation is discussed through some related issues such as: the concept of sustainable development, sustainable regional development agenda in Egypt and regulation and characteristics of SMEs, which are necessary to achieve sustainable urban and regional development.

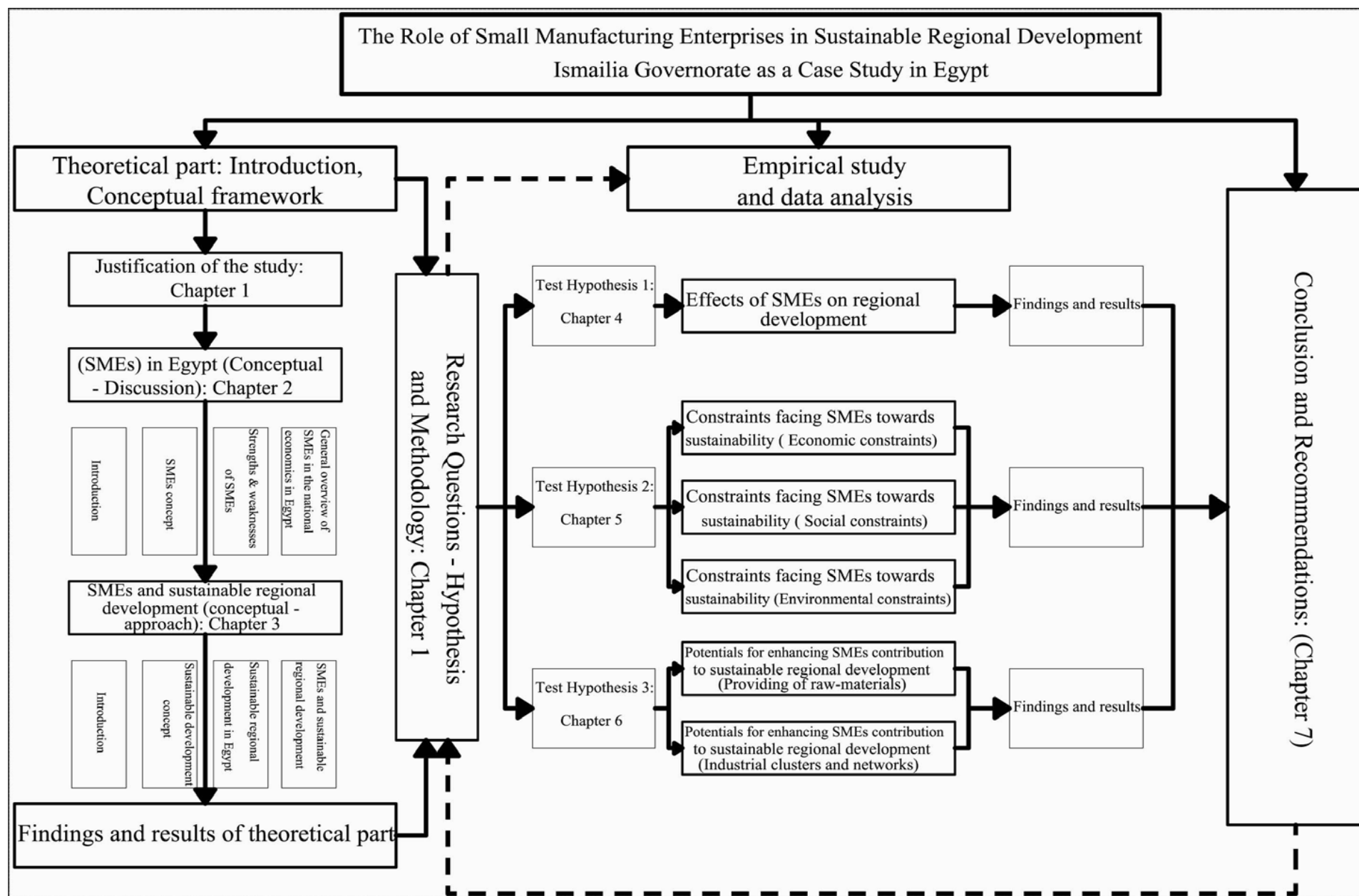
Chapters (four to six) deal with survey results and data analysis. In these chapters questions raised and hypotheses developed in chapter one are answered and tested. Chapter four deals with the first hypothesis which states that, SMEs have in general a positive effect on the economic and social development of a region. This chapter evaluates the ability of SMEs to drive the regional and the national chains of economic value-added, the capability of SMEs to create job opportunities at the regional level and the effects of SMEs in terms of the way of life and living standards of employees and their families, including educational level, employment and the marital status. This chapter discusses also the shelter issues and the socio-economic status of the employees in comparison with the regional and national level.

Chapter five deals with the second hypothesis in this thesis suggesting that, the effects of various types and sizes of SMEs on the regional sustainable development are limited for the time being. In this chapter, group of factors related to the economic, social and environmental obstacles and constraints facing SMEs towards sustainable regional development are analyzed. This chapter discusses the impacts of the limited invested capital of SMEs as well as the instability of supply and demand and high market risks on the sustainability of SMEs. Also, the influence of the low qualified employees and the absence of the suitable insurance and work protection in the enterprise in terms of sustainability of SMEs are highlighted. Furthermore, this chapter discusses the effects of the absence of ecological awareness of both entrepreneurs and employees on the sustainable development at the enterprise and regional level.

In chapter six, the potentials regarding the SMEs contribution to sustainable regional development are evaluated. This chapter shows the ability of SMEs to make use of local raw materials and to drive the chain of economic activities inside the region. The ability of SMEs to exploit the work through clusters and network, which is known as production lines, is clarified. Specifically, this chapter tests the third hypothesis stating that SMEs offer high potential for the sustainable development of regions, on the grounds that they can provide, in many cases, raw materials that may be imported from both the regional and national levels. Such potential so far is limitedly used. Also, many SMEs on the regional level do not make use of work potential through manufacturing clustering (the idea of production lines) even if they have desire to do so.

Chapter 7 discusses the findings and the lessons of the thesis are. Also, in this chapter guidelines for policies and recommendations were suggested to create a favourable condition to encourage SMEs to play a significant role in the field of national economic and in the field of sustainable regional development Fig (1. 4) shows the structure of the thesis for more clarification.

Fig (1.4): The structure of the thesis



## Chapter 2: Small and Micro-Manufacturing Enterprises (SMEs) in Egypt

### 2.1 Introduction

Small- and medium-scale enterprises (SMEs\*) make important contributions to economic and social development. In all economies they constitute the vast majority of business establishment. SMEs are usually responsible for the majority of jobs created and account for one-third to two-thirds of the turnover within the private sector. In many countries they have been the major engine of growth in employment and output over the last two decades. In developing countries they are seen as a major 'self-help' instrument for poverty eradication. In transitioning economies, the main target countries of this publication, they provide the best illustration of the changes in ownership structures, business culture and entrepreneurial behaviour over the past decade<sup>4</sup>.

The world-wide contribution of SMEs to economic development is significant. In the EU, for example, about 90% of all enterprises are SMEs, and they account for 70% of all economic activities. Also, SMEs play a key role in transitioning and developing countries. These enterprises typically account for more than 90% of all enterprises outside the agricultural sector, constitute a major source of employment and generate significant domestic and export earnings. In Egypt, for example, more than 99% of all enterprises are SMEs, and they generate also more than 77% of job opportunities at the national level (CAPMAS 2000). As such, the development of SMEs' emerges as a key instrument in poverty reduction efforts. Globalization and trade liberalization have ushered in new opportunities as well as challenges for SMEs. Presently, only a small part of the SME sector is able to identify and exploit these opportunities and deal with the challenges. The majority of SMEs in developing and transitioning countries, however, has not been able to fully exploit the benefits of globalization and, to add to the situation, are frequently under pressure from cheaper imports and foreign competition within the local or domestic markets. A major objective of work to promote the development of the SME sector is, therefore, to change the balance between these two groups of SMEs, and to equip SMEs to better meet the challenges of globalization while benefitting from its opportunities (OECD 2004b).

Creativity and innovation are crucial to SMEs' prospects of surviving these challenges. In the emerging context, competitiveness is contingent on a firm's ability to improve and modify its products, processes and modes of operation on an on-going basis and to adapt to constantly changing market conditions. This requires a strong entrepreneurial spirit, as well as creativity and flexibility. These characteristics are business traits that are becoming essential rather than simply admirable, particularly in during this period in the history of trade that is being referred to as the "creativity revolution."<sup>5</sup> If manufacturing SMEs in the region are to be able to compete under these new regional and international conditions, it is imperative for them to improve their products and enhance their performance by various means. They must be innovative in finding ways and tools that will help them respond to change, identify and exploit opportunities, create and develop new markets, and adapt to new technologies and apply these technologies (ESCWA 2001). SMEs must be able to respond quickly and efficiently to international market signals, to take advantage of trade and investment opportunities and to reap the benefits of the international trading system. This means they need to be competitive and productive. Effective business support systems are needed to enhance competitiveness

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\* In this dissertation the abbreviation SMEs is used in different ways according to the specific context. In chapter 1, 2, 3 the term refers to small and medium enterprises in general, whereas in chapter 4, 5, 6, 7 the term is used as abbreviation for small manufacturing enterprises of which most are micro enterprises.

<sup>4</sup> See: <http://www.oecd.org/dataoecd/2/56/33926971.pdf>, P 17, 12.07.2003.

<sup>5</sup> <http://www.escwa.org.lb/information/meetings/events/10-12june/background.html>, 23.03.2005.

and productivity of SMEs. Improved SME competitiveness could obviously contribute to economic and social development and poverty reduction (OECD 2004b).

At this time, we see a noticeable international concern with the upgrading and development of SMEs in order to make them better able to respond to the rapid changes of the market and to make themselves competitive in a global economy. We find that many SMEs in the Arabic societies die abnormally without creating other efficient, modern and self-developed industries. This leads to: 1) Deprivation of the local communities from the self-generated facilities which are locally available and cover their necessary needs for foodstuffs, garments and homestead; 2) Marginalizing and neutralizing the great majority of these communities away from an effective participation in the production and local development processes, and converting them into a large mass of consumers who are not able to meet their own basic needs and depend totally on the national or international markets; 3) Degradation of the socio-cultural structures of these communities, breaking down of their preferential way of life and of their local character, and emergence of hidden unemployment, as well as exacerbation of emigration problems as a result of the weakness of their local SMEs; and 4) Wasting great potential which could be used to achieve socio-economic development at the national and regional levels, as well (El-Mously 1994b).

Generally, our local communities still have great potential sources for resources and raw-materials, especially skills and capabilities of employees. Moreover, the distinct social structure formation of each community is very important to establish SMEs. These SMEs will, in fact, be able to achieve the local development while reducing the unemployment problem not only at the local level but also at the national level, as well. SMEs will also contribute to provide physical and moral stability for these communities. There are many questions about the definition and the concept of SMEs. What are their advantages; and what are the challenges facing SMEs? What are the differences between SMEs and the larger enterprises? What is the role which SMEs have played in the Egyptian national economy over the years? This chapter will attempt to answer these questions.

## **2.2 SMEs concept and definitions**

The level at which the enterprise is deemed small is a subject of a long debate and depends on the purpose of study. Defining the sector at the outset is important in order to outline the group of enterprises targeted. Small is relative and varies from one country to another. As a result, the World Bank accepted, in principle, the definitions used by the individual member countries (Levitsky 1989). Often quantitative and qualitative measurements, or a combination of the two, are used. Given the lack and the low quality of data, these measurements may be a subject of considerable inaccuracy. Quantitative measures are clear and easy to apply while qualitative measures are relatively more satisfactory but difficult to use and operate (Elleithy 1994).

### **2.2.1 Qualitative definition of SMEs**

The qualitative characteristics of SMEs would particularly reflect issues of ownership and (inter)dependence. Being a small entrepreneur fundamentally means coping with (and enjoying) high levels of autonomy: standing alone and having total responsibility for the full range of enterprises activities. Within the firm, personal relationships and individual qualities are more important than formal hierarchies and promotion systems. Because the firm's own resources are limited, there is at the same time a high dependence on suppliers, banks, accountants, etc., and on appropriate, supportive legislation. Owner managers have to be close to their customers (if they don't sell they don't live). The OECD report shows that, enterprises networks become social networks and the entrepreneur's

standing in the community is highly dependent on success or failure (OECD 2004a). These measurements distinguish with international characteristics.

The qualitative measurements of SMEs have agreement from most world countries, because they did not expose to relative side of small scale industries (size of the enterprise). They concentrated on the description of the small firm characteristics according to its effect in market, or its management form and its possession (Labib 1995). Some experts think that the qualitative measurements are more suitable for small scale industries (Pears 1971). It is noticed that these definitions are hierarchy of description from one to several small enterprises' characteristics. The following are some examples:

#### Examples for qualitative definitions of SMEs

	<b>Bolten Report.</b> The SME must have the following characteristics (Bolton Report 1971):	<b>(C.E.D).</b> The SME should have at least two from the following features, 2001 <sup>6</sup> :	<b>Hauser.</b> According to Hauser the SME must have the following factors (Hauser 2000):
Qualitative characteristics of SMEs	<ul style="list-style-type: none"> <li>• One that has a relatively small market share.</li> <li>• One that is managed by its owners or part owners in a personalized way, not by an organized managerial structure.</li> <li>• One that is independent with the owners/managers having control of the activities of the enterprises. They should only be limited by outside elements in matters of financial obligation.</li> </ul>	<ul style="list-style-type: none"> <li>• The area of operations is primarily local, although the market isn't necessarily local</li> <li>• Management that is independent, since the manager usually owns the enterprises.</li> <li>• Capital is supplied and ownership is held by an individual, or a few individuals.</li> <li>• The enterprises is small in comparison with the larger competitors in its industry.</li> </ul>	<ul style="list-style-type: none"> <li>• The personal responsibility for the enterprise's success or failure.</li> <li>• The identity of ownership and personal responsibility for the enterprises activities.</li> <li>• The identity of ownership and personal liability for the entrepreneur's and the enterprise's financial situation.</li> <li>• The personal relationship between employer and employees.</li> </ul>

In summary, the most common qualitative element in definitions for SMEs is the independent ownership, mostly by an individual, a family or a small group of individuals. Other criteria as non-dominance in its industry or relative size compared to other players in the industry can be critiqued. They ignore that many successful SMEs are highly specialised niche players, which often dominate their special niche of the market or their special industry segment. Such criteria would necessarily require defining the scope of the industry hence include more subjective elements.

<sup>6</sup> © Dagmar Recklies, March 2001, available under <http://www.themanager.org/resources/Small%20Business.htm>, 24.10.2003.

### **2.2.2 Quantitative definition of SMEs**

The quantitative definition has a local flavour, because they have different estimations from one country to another according to the socio-economic conditions in the society as the population size, the manufacturing growth level, the economic system and also the pattern of socio-cultural values. So, “small” is relative and varies from one country to another and from the stage to another in the same country, thus, what is small in one country is not in another. Therefore, the majority of countries use one or more quantitative measures, such as the number of employees, value of capital, sales turnover, and added value. The most commonly used measure is that of employment, due to its simplicity and the ease of collection of data (Elleithy 1994).

Turnover and assets employed can also be measured but both are problematical. Relatively small enterprises (in employment terms) can have a large turnover as a result of buying in large quantities of components. There are also major problems regarding the change of the asset values from time to time. A more satisfactory measure would be that of added value but this is difficult to calculate. A general distinction can be made between self-employment, micro, small and medium sized enterprises (OECD 2004a).

Some countries tend not to make a distinction between legal and statistical definitions. This is the case for Canada, Greece, Portugal, Mexico and the Slovak Republic. The definition can be based on a threshold in revenue, like it is the case in Canada, it can be based on number of employees, as in the UK, or it can combine the number of employees and turnover for legal and statistical purposes like in Portugal. The Slovak Republic, Mexico and Greece use the number of employees as criterion (OECD 2004a).

Other EU countries use a simplified legal definition based on employment and turnover, for example, this is the case in Hungary and Moldova. Some EU countries do not have a commonly accepted legal and administrative definition; this is the case for the Netherlands and Spain. Similarly, in New Zealand there is no common administrative definition; turnover is used by some, taxes on employee salaries and wages by other administrations. In Brazil, different criteria and thresholds are used for different legal, fiscal and international trade purposes. Denmark, France, Norway and Switzerland do not use a legal definition. In Japan, the regular employees, together with capital or investment, determine the size class, however, thresholds vary for the different activity classifications. This is also the case in Korea, where SMEs are classified by the number of permanent employees, capital and sales. In the US the number of employees is used to identify small enterprises in most sectors, except in the non goods producing sectors where annual receipts are the criteria (Lindner 2004).

The statistical definition is generally based on the number of employees or takes account of a mix of the number of persons employed and turnover (OECD 2004b). However, a number of countries do not differentiate SME statistics collection from other statistics; this is the case, for instance, in Denmark, Germany, New Zealand and the US (OECD 2004b). Norway uses the number of employees together with the independence criteria (like Turnover and Balance sheet). Finally, a simplified definition, based on the number of employees, is used in France and Finland in addition to the EU recommendation. Size thresholds and the definition of an SME vary also according to the sector of economic activity. Different combinations of criteria are sometimes used. For instance, in Australia employment is used as a criterion for identifying size classes in all sectors but agriculture. Australia is considering introducing alternative or additional criteria for non-employing enterprises. In the agricultural sector, size classes are defined using the estimated value of agricultural operations



(EVAO) that is evaluated based on physical production criteria and sales value (OECD 2004b). The following are some various definitions of small scale enterprises in selected countries and some international organizations:

**In most EU countries**, there is a distinction between the legal definition and the statistical definition. The legal definition, based on EU recommendation number 2003/361/EC takes account of the number of employees, annual turnover, annual balance sheet and independence (see Table (2.1) below). In some cases the monetary thresholds have been adapted (Italy). More generally, this definition has served as a basis for other European countries, such as accession countries (e.g. the Czech Republic) and Turkey (OECD 2004b).

**Table (2.1): The definition of SMEs according to the European Commission**

Enterprises	Employees	Annual turnover	Annual balance sheet	Autonomous
Micro enterprise	1 to 9	< 2 million euro	< 2 million euro	Conform to the criterion of independence as the enterprise should own 25% or more of the capital, or voting rights by one enterprise.
Small enterprise	10 to 49	< 10 million euro	< 10 million euro	
Medium enterprise	50 to 249	< 50 million euro	< 43 million euro	
Large enterprise	More than 250	> 50 million euro	> 43 million euro	

**Source:** The Commission of the European Communities, Commission recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises, (notified under document number C(2003) 1422), (2003/361/EC), Official Journal of the European Union, 20.5.2003.

**In the USA**, the definition of small enterprises is set by a government department called the Small Enterprises Administration (SBA) Size Standards Office. Unlike the most of European Union which have simple definitions applied to all industries, the US has chosen to set size standards for each individual North American Industry Classification System (NAICS) coded industry. This variation is intended to better reflect industry differences. The most common size standards are

- 500 employees for most manufacturing and mining industries
- 100 employees for wholesale trade industries
- \$6 million of annual receipts for most retail and service industries
- \$28.5 million of annual receipts for most general & heavy construction industries
- \$12 million of receipts for all special trade contractors
- \$0.75 million of receipts for most agricultural industries

Approximately one quarter of industries have a size standard that is different from those listed above. Refer to the SBA website for the full table of size standards<sup>7</sup>.

<sup>7</sup> See <http://www.sba.gov/size/sizetable2002.html> and <http://www.lib.strath.ac.uk/busweb/guides/smedefine.htm>, 10.07.2003.

**In Japan**, capital or total amount of investment together with the employees is used to define SMEs, but even though the same criteria are used, thresholds that apply to each element not only vary by sector but also by criteria. To illustrate this point: taking the criteria employees and capital/investment, a SME in Japan has an upper bound of<sup>8</sup>:

- 300 persons and 300 million yen\* in manufacturing, construction and transportation;
- 100 persons and 100 million yen in wholesale trade;
- 100 persons and 50 million yen in services industry;
- 50 persons and 50 million yen in retail trade.

**In India**, the official definition of small scale industries has undergone changes over the years in terms of investment limits. Thus, till 1960 the definition of SME unit was: „the enterprise that has no more than 50 or 100 employees with or without power and its fixed assets do not exceed Rs 500000 in fixed assets”. The investment limits was increased to Rs 750000 in Plant & Machinery without any other conditions regarding the employees in 1966. From 1966 to 2001 the investment limits in SMEs were raised several times, it reached in year 2001 to Rs. 10.00 million<sup>9</sup>. Up 2001, the Indian government adopts the following definition of SMEs:

An manufacturing undertaking in which the investment in fixed assets in plant and machinery whether held on ownership terms on lease or on hire purchase does not exceed Rs 10 million (Subject to the condition that the unit is not owned, controlled or subsidiary of any other manufacturing undertaking). Investment limit in plant and machinery in respect of tiny enterprises is Rs 2.5 million irrespective of location of the unit. SSSBEs industry related service/ enterprises enterprises with investment up to Rs 500,000 in fixed assets, excluding land and building, are called Small Scale Service/ Enterprises Enterprises (SSSBEs). This limit has been raised to Rs.1 million w.e.f. September 2000<sup>10</sup>. (1USD= 49 Rs.).

**In Bangladesh**, a “small enterprise” is defined as an manufacturing undertaking engaged either in manufacturing or in a service activity and whose total fixed investment including initial working capital but excluding the cost of land, expenses on inland transportation, commissioning of machinery, and duties and taxes (does not exceed Taka 30 million, **1 US \$ = 60.12 BDT**). An investment for “Balancing Modernization, Replacement and Expansion” (BMRE) would not entail a change in category. Small units and cottage industries had originally been defined in terms of the numbers of employees employed. Though this definition is no longer officially in use, it provides a readily applicable criterion for purposes of comparison. According to this definition, a small scale unit is on with between 10 and 20 employees if it uses mechanical power and between 20 and 150 employees if it does not. Along the same line, a cottage industry is allowed up to 10 employees if it uses mechanical power and up to 20 employees if it does not.

**In Pakistan**, the Punjab Directorate of Industries (PDI) defines a small unit as one with fixed assets worth Rupees 10 million or less, excluding the cost of land. The Punjab Small Industries Corporation

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<sup>8</sup> See <http://www.planning.gov.sa/PLANNING/ALL%20PAPERS/DAY3/Small%20and%20Medium%20Enterprises/SME%20Development%20in%20Saudi%20Arabia/SME%20Development%20in%20Saudi%20Arabia.doc>, 10.07.2003.

\* 1 US Dollar = 116.887 Japanese Yen, in 29.03.2006.

<sup>9</sup> See <http://www.smallindustryindia.com/publications/areports/ar2002-03/ssi-eng0203.pdf>, 24.01.2003.

<sup>10</sup> See <http://www.smallindustryindia.com/ssiindia/definition.htm>, 24.11.2004.

(PSDI) sets this limit as Rupees 20 million. According to PDI, all enterprises with assets excluding land, valued between Rupees 10 million and Rupees 100 million are medium scale units. PSDI defines medium scale units as enterprises with assets excluding land valued between Rupees 20 million and Rupees 100 million. All enterprises employing less than 10 persons are classified as cottage industries while those employing over 10 persons are categorized as small or medium sized enterprises. **1 US \$ = 60.00 PKR.**

**In China**, the Chinese government issued in February 2003 a new standard defining the domestic SMEs. To be qualified as a SME in the country, companies in the manufacturing category shall employ less than 2,000 people, or realize annual turnover of no more than Rmb300 million, or have total assets of less than Rmb400 million; companies in the wholesale and retail sector shall employ less than 500 people or realize annual sales of Rmb150 million; and companies in the transportation industry shall employ less than 3,000 people or realize annual sales of Rmb300 million. Being an international organization, we will also take into account the prevailing international standards regarding SME criteria and focus more on the enterprises side than on the formal definition side. **1 US \$ = 8.3 CNY.** Appendix A (2.1)

### **2.2.3 Definition of SMEs in Egypt**

When trying to define the small scale industries in Egypt, the multi definitions problem of small scale industries appeared. There is no unique and binding definition of SMEs. The only existing definitions of this sector are the ones which have been developed by single institutes. These definitions can hardly be assimilated or compared. Moreover, they have not received an acceptance by the Egyptian authorities. The following is some examples:

- **Ministry of Industry (MOI)** defines SMEs as having fixed assets not more than LE 500 thousand\* and the employees between 10 and 100 individuals.
- **Ministry of Planning (MOP)** defines SMEs as having less than LE 50 thousand in fixed assets including land and buildings.
- **Ministry of Local Development (MLD)**, the Handcraft Industries and Productive Cooperative Organization (HIPCO) of the Ministry of Local Administration and the Central Productive Cooperative Union (CPCU) define the small industries in the cooperative sector according to a legal definition. Accordingly, every enterprise that is a member in a primary cooperative belongs to the scope of the organizations target group. There are no economic criteria such as number of employees or fixed assets but the enterprises must be formal
- **The Industrial Development Bank** defines small enterprises in any industrial sector as those with fewer than 50 employees employed and with an investment cost not exceeding LE 1 million – excluding land and building and capital costs not exceeding LE 500,000 (Abdel-Wahaab 2000).
- **National Bank for Development (NBD)**, within the “Small Enterprise Credit Program” the NBD defines SMEs as manufacturers employing between 1 and 5 employees. The clients can be informal sector artisans or small enterprises. Basis for being eligible for a loan is the cash flow analysis. The loan size (between LE 250 to LE 10000) limits the target group on small enterprises.
- **Danish International Development Agency (DANIDA) in Egypt** defines micro enterprises as having 1-5 employees and small enterprises are defined as having 6 – 15 employees.
- **The United State Agency for International Development (USAID)** defines Micro Enterprises as enterprises having 1-5 employees and small enterprises are defined as having 6 – 15 employees

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\* 1US \$ = 6.18510 LE

and less than LE 25 thousand in fixed assets, excluding land and building. The various USAID supported associations running loan programs follow that definition such as the Egyptian Small Enterprises Development Association (ESED).

- **The National Policy on Small and Medium Enterprises Development (NDP)** in Egypt defines SMEs in the non-agricultural private sector as follows: micro enterprises (employing 1-4 employees), small enterprises (employing 5-14 employees), and medium enterprises (employing 15-49) employees.
- **The Environmental Management and Technology component of the EEIF** defines small enterprises as enterprises with a work force between 10-50 employees, and medium enterprises are defined as enterprises with 50-100 employees.
- **According to the “private sector development in Egypt: the status and the challenges”** SMEs are defined as those enterprises employing 1-49 employees. More definitions of small scale industries are shown in Table 2.2:

**Table (2.2): Definitions of small scale industries according to some governmental organization in Egypt**

Governmental organization	Number of employees fewer than:	Capital value per LE. excluding land and building
Specialized National Councils	100	500000
Industrial Design Development Centre	150	1000000
General Organization of Industrialization	50	500000
Federation of Egyptian Industries	50	100000
Egyptian <b>Shoura Assembly</b>	20	1000000

Source: Hefnawy 1998.

1 US \$ = 6.18510 LE. For the year 2003.

Also, many definitions of small scale industries were created by experts in this field, but the most important one was born by Elmosly, who defined the small scale industries as those with fewer than or equal 20 employees employed in the case of using machines with movement power source, which depend on manual efforts, and the maximum number of employees can be extended to 50 in the case of using only the manual work or by using the machines in a marginal way (El-Mously1994a).

From the previous presentation of SMEs definition at the international or national level, it was cleared that there is no only one operating definition of SMEs in the world. But this definition was widely different from one country to another, according to the progress of socio-economic development for each country (**See appendix A2.1 for the comparison among selected countries in terms of definition of SMEs**). This definition can be changed over the years in the same country according to the achievement of economic growth as the case of India and EU countries. But it is unacceptable to be found more than one definition of SMEs in the same country in the same time as the case of Egypt.

In Egypt there is no concord about the definition of SMEs among different concerning government or non-government organizations. The small enterprise according to the criteria of one organization is not small according to the criteria of the other one. Of course this conflict will lead to waste efforts which aim to develop this sector. So, the national policy on small and medium enterprises development (1997) has called for the need for a unified operational definition in order to facilitate development efforts and enhance coordination among the various actors in the field of SMEs (Abdel-Wahaab 2000).

In absence of an official definition\* for small scale industries in Egypt, in the light of the previous definitions and the general small enterprises situations on the national level and for purpose of this study, the research suggested a definition for Small Manufacturing Enterprises (SMEs) **as those manufacturers with 20 or fewer employees (According to the published data by CAPMAS in 2002, 97.7% of the enterprises at the national level in Egypt do not exceed 20 employees per enterprise), and capital investments not exceeding 500.000EGP (i.e., \$80.839,40 in 2003 US figures) excluding the cost of land and building and subject to the condition that ownership of the entity is independent; that is the unit is not owned, controlled by, or a subsidiary of, any other manufacturing undertaking.** It should be noticed that the previous definition of SMEs is including micro manufacturing enterprises MMEs too. In this research it will be used the shortening of SMEs as a symbol for both micro and small manufacturing enterprises together.

#### **2.2.4 Differences between SMEs and other scales of enterprises**

Still there is a mix between SMEs and other sizes of the enterprises. So, it is necessary to differentiate among them to be easy for the policy makers to define correctly the SMEs. Then it will be uncomplicated to provide these enterprises with all essential support and promotion in terms of sustainable development. (Burns 1996) stated in ‘ Small Business and Enterprise – 2<sup>nd</sup> edition’ “Of course there are other characteristics of small business that may be added to the list; perhaps the most obvious is the severe limitation of resources faced by small firms, both in terms of management and manpower as well as money.” This statement highlights the qualitative and quantitative elements of small enterprises that make them fundamentally different to larger enterprises and not simply smaller scale ventures. Small enterprises do in fact have many characteristics that set them apart from larger ventures.

- **Personalized management** - It is implied that the owner/ manager(s) of a small company should always be involved in material decisions and take an active role on all aspects of management. Since one person has such overwhelming control over decisions, their character is likely to be stamped heavily on the ethos of the enterprises. The business is quite often wholly dependant on this person, and if he/she were to become disposed the business is likely to fail.
- **Small Market Share** - They cannot dictate price or influence heavily on numbers of goods sold. Their buying power is reduced, since they do not buy in large quantities they must buy at a more expensive price. Small enterprises must therefore sell at a more expensive price and become less competitive. Small enterprises quite often make up for this by specialising and creating a niche market.

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\* During the course of the analysis, a new law was passed (May 2004) which provided an official definition for SMEs in the Egyptian context. The law defines SMEs as enterprises with a number of employees up to 50, and a capital between 50 000 LE to 1 million LE. Enterprises with a capital less than 50 000 LE are considered as micro enterprises. Although it is very early to evaluate its impacts on sector of SMEs, this law is considered an important step on the right way to promote SMEs in Egypt. However, it has not been applied in practice. Therefore the research uses the definition presented in the section.

- **Customer Loyalty** – Small enterprises, especially those occupying a niche market often become reliant on a small but loyal customer base. If they should lose only one or two of these customers the enterprises may well fail.
- **Finance** – Small enterprises often find it difficult to raise the finance to grow, and are very dependant on customers prompt payment in order to survive. Often if one or two customers do not pay their bills promptly, the business fails.

Some more differences between SMEs and other sizes of enterprises can be clarified in Table (2.3) which classifies the enterprises according to 8 criteria as follows.

**Table (2.3): The difference between SMEs and other sizes of manufacturing enterprises**

Comparison factors	SMEs			Medium Enterprises	Large Enterprises
	Micro		Small enterprises in factory		
	House enterprises	Environmental and handwork enterprises			
<b>Place</b>	house	enterprise	factory	factory	factory
<b>Location</b>	Villages and cities ( small – medium – large)	Villages and cities ( small – medium – large)	Large Villages and cities (small – medium – large)	Medium and large cities	Large cities
<b>Ownership pattern</b>	Individual	Individual and combination	Individual or personal companies	Personal and capital companies	capital companies
<b>Number of employees</b>	Less than 5 employees	5-10 employees	10-50 employees	50-100 employees	More than 100 employees
<b>Mechanical level</b>	Handicraft (work that requires both manual and artistic skill)	Handicraft + simple equipments	Handicraft + half automatic	Half automatic and automatic	automatic
<b>Market size</b>	Family and friends	District and village	Local market	Local and national market	National and international market
<b>Raw-materials</b>	Cheap and localized	localized	Localized and some times imported	Localized and imported	Localized and imported
<b>Energy use</b>	Very low	low	medium	High	Very high

Source: Hefnawy 1998.

### **2.2.5 The patterns and characteristics of SMEs**

There are many studies which have discussed SMEs' issues like definitions, importance, advantages and the difference between small and other sizes of industries, but very limited studies have discussed the patterns of SMEs and the difference among each other. So, in this context we will argue the classification fundamentals of SMEs, and we will try to be familiar with the suitable patterns of SMEs for developing countries from a sustainable development perspective. The results will be tested in the empirical part of this study. There are many variables classifying small scale industries according to the used criteria such as structure of organization, used technology, products pattern, the pattern of used raw-materials, the continuity level and pattern of division of work between man and machine. The following presents details (El-Mously 1997).

#### **2.2.5.1 SMEs classification according to structure of organization**

According to this criteria the small scale industries classification divides into: Non factory system and Factory system. The non factory system may include household industries, rural industries, environmental industries, handicraft industries and Separated factories system.

The household industries may spread in rural areas more than the urban areas. These industries usually take place in the house or in a space beside the house. The employees in these industries are always from one nuclear or extended family. The equipments, which are used in these industries, are often very simple and traditional (manual means). The production of these industries is not for marketing and is only consumed in the family to cover the basic needs for foodstuff and clothes. The maximum number of employees in this pattern of industry is about 5 persons.

The rural industries use always the rural raw-materials as agriculture products. These industries adopt a handmade technique in the manufacturing process and sometimes use simple equipments. Examples for these industries: handmade carpets, flax industry, honey, filling of vegetable and fruits, drying of dates and mats industries. This pattern of industry is usually founded in enterprises or in especial spaces beside the rural house, and the number of employees does not exceed 10 persons.

The environmental industries exploit circumstances of environment and use its natural resources and raw-materials whether it is plants, animals or minerals such as palm leaves industry and wool industry. This pattern of industries is located always beside the existence of natural resources, whether in rural or in urban areas and the number of employees is changeable until 20 persons.

The handicraft industries are often practised in enterprises, which are found in the house or far or near from the house. These industries depend maybe on half-automatic, electric and manual equipments in the production system. This pattern of industries produces goods like furniture, carpets and shoes or services as repairing and conservation of equipments, machines and goods. This pattern has number of employees not exceed 10 persons.

(Staley and Morse 1965) clarified that non-factory system includes industries which are founded in small enterprises but in the same time they have full or partial contracts within scattered factories. This pattern of industries is usually distributed throughout the whole region and has number of employees until 10 persons.

The factory system may include: independent small factory system and feeding small scale industries. The independent small factory system has factories which are small, and depend on one production line to produce the intermediate or final goods. The number of employees in this pattern of industries is between (50 – 100) employees, and its capital costs not exceeding 500.000 L.E.<sup>11</sup>, and this pattern also depend on labour condensation and some modern technology, which is often imported from abroad.

The pattern of small factories for feeding industries means that the small factories have a cooperation with the large factories to produce part or stage of the final production according to the contract between the two factories ( like in cars industry). This pattern of industries is always located in the large manufacturing zones in the big cities and regions.

The previous presentation for the classification of small scale industries according to structure of organization pattern shows that the non-factory system is more suitable for developing countries than the pattern of factory system, because the non-factory system has the ability to spread easily in rural and urban areas as well. This helps to decrease the immigration to big cities into these countries. This pattern depends on simple local technology which maybe was developed from one generation to another in the local society. Also this pattern uses the known raw-materials in the local community, which are often renewable and natural. But the factory system does not have these advantages; it is often dependent on imported technology, and needs more conditions for its location in the whole country.

Although the pattern of Non-factory system is more suitable for developing countries regarding the reasons presented above, but one should be careful when dealing with this pattern. Thus, the separation of SMEs in the residential areas, either in cities or villages, produces solid or liquid wastes as well as noise and air pollution. It is very difficult for a SME in this pattern of industries to treat its wastes alone or to bear the costs of this treatment. This will lead to high stress on the environment, and generates many environmental problems not only at the residential and local levels but also at the regional and national levels.

The pattern of Factory system will be more efficient in terms of environmental protection, because of its capability to deal with the previous problems, but it is very expensive for developing countries. The two previous patterns can be combined, to get the advantages from each one, if a cluster system of SMEs is adopted. The cluster will consist of several single enterprises. This means that the cost of each enterprise will be very low in comparison with the factory cost. At the same time, these enterprises will be close to each other, which make it easy to treat the wastes of SMEs with very low costs in the light of the cooperation system among the enterprises in this cluster.

#### **2.2.5.2 SMEs classification according to technology**

According to this classification small scale industries can be divided into: Traditional SMEs and modern SMEs.

The traditional pattern of SMEs depends on traditional technology which was developed slowly according to observation and practise during the long-run in progress of production process. And any traditional technology in any local society often is considered inheritance of the previous generations.

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<sup>11</sup> Hefnawy Abdulla, the role of small scale industries in rural development, previous reference.



Modern pattern of SMEs uses technology which is depend on modern scientific, and it has a rapid technical development, because of the strength relation between the used technology in side and activities of scientific research and development from another side. These industries are not often self origin, but they depend on imported technology from industry countries.

From my point of view, to achieve sustainable small scale industries, it should be depended on the local technology in the production; also the local and traditional technology should be developed to produce more useful products for the society with less impact on environment. The imported technology from my point of view helps maybe to produce more goods, but in another side kills the local mind and technology. The sustainable development concept accepts how to produce the technology to make something better, but it does not accept how to use technology, which is imported from abroad, to fabricate any thing.

#### **2.2.5.3 SMEs classification according to products pattern**

According to this criterion small scale industries can be divided into patterns: Goods industries like furniture, textile, metal, foods and etc. and service industries such as repair and maintenance of (agricultural equipments, cars and trucks, machines, industry instruments and etc.

There are some kinds of industries according to this classification overloads the environment they make noisy, sometimes air or water pollution and sometimes solid waste pollution, in this pattern of industries it must be studied their impact very well to take the right planning decision about them (which industries can be located, where, under any conditions).

#### **2.2.5.4 SMEs classification according to the pattern of used raw-materials**

According to this classification small scale industries can be divided into five patterns as follows:

- 1- Industries depending on natural local raw-materials.
- 2- Industries depending on natural raw-materials imported from national market.
- 3- Industries depending on local fabricated raw-materials.
- 4- Industries depending on local fabricated raw-materials imported from national market.
- 5- Industries depending on raw-materials imported from global market.

From my point of view the sustainability of small scale industries could be achieved if the transportation of raw-materials were the minimum as possible, because this will reduce at first the costs of transport, second will reduce the consumption of roads or movements axis, which lead to reduce the air pollution and the used energy. Also in the same time, if the raw-materials, which are used in industry, are natural and renewable, we will get more sustainable development of small scale industries.

#### **2.2.5.5 SMEs classification according to the continuity level**

According to this classification small scale industries can be divided into: Seasonal industries and continual industries

**The seasonal industries pattern** depending on seasonal raw-materials, which are existed in some time of the year, like some foods industries such as olive oil, piccalilli, pressed dates and draying dates.

**The continual industries pattern** depends on non seasonal raw-materials, like light technical industries, plastic, and wood industries.

There is no precaution of both patterns of the small scale industry to achieve sustainability, if we succeeded to save the raw-materials for small scale industries during the year by necessary storing and under the environmental conditions.

#### **2.2.5.6 Small scale industries classification according to division of work between man and machine**

According to this classification, small scale industries can be divided into four patterns as follows:

- 1- Manual-work, depend on the body-muscles effort of human, such as blacksmith.
- 2- Mechanical industries, this pattern of industry depend on non-organic source of energy (for example electric energy), but the human still playing the mean control role in the production process.
- 3- Half-automatic industries. In this industry, the control role of human will decrease comparative with machine role.
- 4- Automatic industries. The machine works automatically, and it does not need the human act during the normal working.

From my point of view, there is no precaution from the four previous patterns of the small scale industry to achieve sustainability, if we avoid their impacts on environment, but the manual-work considers the more suitable pattern of sustainable small scale industries in developing countries, because it has low impacts on environment.

### **2.3 Strengths and weaknesses of small scale industries**

Currently, SMEs are forced to cope with a whole nexus of problematic challenges thrown up by changing conditions on the international market, including, increasingly liberalized trade, an unpredictable, geographically expanding business environment, and increasingly stiff competition at home and abroad. Rules of the twenty-first century competition (“new competition”) are now based increasingly on flexible structures, or flexible specialization, and flexible production processes. These are governed by product-led, instead of price-led, competition, just-in-time principles, sustained innovation and innovative technologies of production involving knowledge-intensive activities including design, quality control, and new management methods based on teamwork organization, with the benefit of good working conditions, and a cooperative inter-firm infrastructure (Nadvi 1995).

If SMEs are not to be marginalized, if they are to become more competitive through the attainment of greater efficiencies in production, they must adapt to the new requirements of the market; acquire the skills and knowledge they need; introduce innovative changes to their products and processes; restructure their operations (namely, create leaner structures); upgrade their technology; improve working conditions; and charge affordable—competitive—prices (ESCWA 2001). If SMEs are to sustain their competitiveness in a globalizing economy, these new rules must be assimilated as part of a continual process of change, rather than a series of end-states.

SMEs often lack the time, information and money to evaluate their activities, to set targets and thus to contribute to continuously improve (economically, socially and environmentally) products and services. Existing international environmental management schemes are often too complex for them to handle. They have to work together in order to raise awareness among SMEs for environmentally and socially sound production patterns, provide them hand on tools that help to integrate environmental and social affairs into day to day business practice and establish economic framework conditions that

reward those efforts. The relative contribution of SMEs to the total manufacturing environmental impact is unknown, but collectively their sheer numbers may mean that their impact on the ecosystem could be substantial. SMEs commonly dominate resource and emission intensive trades such as metal finishing, leather tanning, dry cleaning, printing and dyeing, brewing, food processing, fish farming, textile manufacturing, chemical production, etc( Kuhndt, 2002).

Some SMEs have already taken the lead in managing their own environmental and social impacts in a well-structured way. They have environmental management systems in place, report on their environmental and social performance, train and qualify their staff on environmental and social affairs and work in co-operation with other enterprises along the supply chain to reduce the environmental impacts of products and services. However, the majority of SMEs, especially those in developing countries and countries in transition, are still characterised by their lack of awareness of their own environmental and social impacts and their less structured management of such issues (UNEP 1997). Despite of this, SMEs still have high potentials making them qualified to drive the chain of economic activities in the region towards achieving sustainable regional development. In this context we will try to explain the advantages and constraints facing SMEs towards sustainability.

### **2.3.1 Potentials of small scale industries**

SMEs make up the most important sector of a nation's economy. They are often characterized as a reliable, flexible and innovative partner along the product chain (UNEP 1997). The sector of SMEs is considered one with reasonable equity benefits in terms of distribution of income, especially in developing countries which have suitable circumstances for this scale of industries as low capital and a very large basis of labour, particularly in countries, which have over-unemployment (Gad 1989). There are many contexts about the importance and advantages of small scale industries as an approach for economic and social development in the third world generally especially in Egypt, the following is more details (Gadalla 1989).

1. Small scale industries have great potential to provide job chances and give a solution for unemployment more than other sizes of industries. The matter which helps any way to reduce the poverty and to increase the quality of life in the region.
2. Small scale industries provide jobs to poorly skilled and semi-skilled employees. The matter which helps to integrate this type of employees in the society and gives them the sense of belonging. Accordingly, this will lead to the stability among the different classes in the society.
3. Small scale industries help to decrease the emigration to big cities and achieve the population immobility, because of their expansion geographical easiness inter-regions and rural areas. There is no doubt that the reduction of immigration to great cities in the developing countries is considered one of the important issues in these countries. The SMEs can help to decrease the pressures from the urban areas in the region and make equilibrium circumstance of the population-location in the whole country.
4. Small scale industries avoid the national income depression, which is caused maybe by large industries. Thus, because of the great number of these enterprises, their relatively small capital and their expansion in the country make the failure of part or group of them does not harm the whole economic system but the opposite in the case of the large enterprises.

5. Many small scale industries provide jobs in rural areas where finding a job is more difficult than in urban areas. The matter which helps to achieve the social stability in these areas.
6. Small scale industries often depend on local raw-materials, and this means decreasing importation of these materials from abroad. The matter which helps to save foreign coin using to import these materials from one hand and from another hand, it avoids the environment polluted emissions resulting from the transportation of imported raw-material for thousand kilometres.
7. Productivity is often low in small scale industries, which provides a high potential for improvement;
8. Small scale industries help to redistribute the income among habitants justly in the region. This is considered large advantage of SMEs because of their expansion in the region, instead of concentration the wealth in hands of few persons in the society.
9. The relationship between employees and managers is closer, which favours cooperation. Compared with large enterprises, SMEs are considered more efficient in this field. The relation between owner and employees in SMEs is friendly and informal, the matter which makes the behaviours and decisions quick and immediate and in the same time compatible with the problem or the situation, and this increases the efficiency and the leverage of these enterprises. Also, the communications between employees and owners go clear without barriers or chance of confusion or misunderstand. In this field, if there is any problem, it will be easy to correct it quickly. As a result of the personal pattern in environment of SMEs, the employees are ready so much to help the owner in solving all the problems facing the enterprise, also, if it requires from them to work overtime or causes the delaying of their wages. The matter which gives these enterprises the power to exceed the crises and makes them more capable to achieve the sustainability.
10. Managers often work in the factory and therefore understand technical problems and are able to take innovative, informal and flexible approaches to solving problems. The matter which gives SMEs high competition potential in comparison with other sizes of enterprises.

### **2.3.2 Small scale industries problems**

There is considerable discussion on the internal and external barriers SMEs face in doing sustainable development. Most SMEs perceive environmental improvement as a costly burden. As they are primarily concerned with short-term economic survival, they are not motivated to ask for, or use environmental information or support (UNEP 1997). Smaller manufacturing companies often do not have staff with sufficient environmental knowledge and expertise to be able to address problems and opportunities in the environmental field. Existing international environmental management schemes are often too complex for them to handle. Once a SME has started to implement an environmental management scheme, the process is frequently found to be unexpectedly expensive and is therefore often interrupted (Hillary 1999). Many small scale industries suffer from social, economic and environmental problems which create difficulties introducing improvements in working conditions and productivity and limit accordingly their contribution to achieve regional development. The following is more details.

### **2.3.2.1 Social problems SMEs face**

SMEs, in general, suffer from several social problems, which can hinder their contribution in terms of sustainable regional development. The research summarizes these problems as follows:

1. Difficulty finding skilled employees. SMEs are low attractive for qualified skilled employees. Since, this type of employees always hesitates to accept the work in SMEs, because SMEs can not provide the same high rate of wages which the large enterprises pay it. Also, the chance of elevation is very limited in the case of SMEs, the risks of failure in the case of SMEs are high, the daily work hours in the case of SMEs are too much in comparison with the large enterprises, moreover, the achieving satisfaction level from the work in SMEs is very limited, while the opposite is true in the case of large enterprises. So, in the work market stay in most cases the low-skilled employees who have no chance to work in large enterprises. The matter which leads in most cases to produce low quality and un-competitor production, which can not be easy to market it. Accordingly, the small enterprise will slowly die. Also, because of the low-skilled employees, SMEs can lose high ratio of used raw-materials and generate large amount of solid and liquid wastes moreover, they can consume relatively very much energy in the manufacturing process (Allam 1993).
2. Lack of knowledge about management and occupational safety and health. SMEs especial in developing country in most cases do not provide safety condition for their employees. Also, they do not secure for them the social insurance. The matter which does not give the employees any feeling of stability in the enterprise and will of course harms its production system (Allam 1993).
3. Many SMEs are very much focused on the personality of the owner. The enterprises' success and market position depend on the vision and the entrepreneurial talent of these persons. The owner of SME is responsible to carry out all of requirements of production system such as incoming and transportation process of the raw-materials, the storing process of raw-material, the manufacturing process and marketing process. It is very difficult to find in reality one person with all of these multi experiences and different skills. The matter which leads in many cases to sharp crises (Allam 1993).
4. The issue of nepotism indicates that the overall stable relationships small enterprises develop with their partners can turn into a weakness when they favour only relatives and friends. This can make it very difficult for outsiders to come into the business, hence makes it more difficult to attract outside expertise and professional management (Kets de Vries, M.F.R. 1993). Also, dependence of SMEs on relatives or family members in many cases leads to fail, because of Managerial difficulties when family objectives and business objectives are in conflict (de Vries 1993).
5. Another basic constraint facing SMEs especially in developing country is the difficult to convince the owners of these enterprises about the idea of sustainable development in the light of the high cost of environmental issues and the lack of an information network that the industry can have access to knowledge and services for tackling environmental issues. This requires the joint efforts of pertinent institutions encompassing governmental and non-governmental organizations to encourage and enable the manufacturing enterprises, the matter which is still not existed in most developing countries.

### **2.3.2.2 Economic problems SMEs face**

SMEs sector, in general, is able to be one of the big players in the domain of sustainable regional development, but it is still suffer from many serious economic problems which affect negatively on the future of these enterprises. These problems are:

1. Financial problems, since small scale industries often have low investment capital and little access to loans. Because of the high degree of risk, most Banks avoid crediting SMEs. Some banks should have great guarantees, which are not available by the owners of these enterprises, to do that. The matter which forces the entrepreneurs to provide their necessity needs of funds by family or especial sources. So, in many cases SME start knotty in the finance aspect. Also, the lack of experience of small entrepreneurs to assessment their needs of funds makes them beginning with specified capital, but after short time, they discover that they must have to redouble this capital, the matter which increases the SMEs problems (Allam 1993).
2. One of the most important issues of the industry is the probability of weakness in competitiveness of some manufacturing sectors. The basic factors detracting from competitiveness of the industry are the inability in maintaining macroeconomic stability, the chronic high inflation rate, the high cost of capital and basic manufacturing inputs, the instability of the institutional structure, inability to keep pace with technological developments, the failure of industry to reach the level at which technology is actually produced and inadequacy of capital accumulation, problems of scale and failure to achieve product quality and a concept of after-sales matching up to international standards. Resources allocated for the promotion of the industry have not been used due to inefficiency of the control mechanisms. In the light of globalization economic, SMEs are forced to cope with hard competition against large enterprises (Allam 1993).
3. The relatively small size of SMEs often leads to disadvantages in economies of scale. Hauser (2000) points out that this small size leads to one of the SMEs greatest strengths – their ability to offer customized and specialized goods and services. This, however, implies that many SMEs cannot make use of cost advantages in mass production. Furthermore, some types of costs are not variable in relationship with company size. Examples are devices for environmental protection (e.g. gas cleaning equipment), which are often under-utilized in smaller companies, or R&D costs. R&D as the basis for SMEs' strength in innovation and flexibility has to be undertaken on a certain minimum scale in order to lead to results. In the result of lower sales and not down-sizable costs, SMEs often incur a higher proportion of fixed costs compared to larger corporations.
4. The relative small size of SMEs makes their capability to incur and cover the temporary losses very limited. SMEs in developing countries can not bear for example 35000\$ without temporary shutdown or without re-assessment of the enterprise efficiency and its work conditions, while the same losses for large enterprise is considered nothing. Also, because of their relative small size, SMEs have no possibility of modification their products to distribute the risks (Allam 1993).

### **2.3.2.3 Environmental problems SMEs face**

The environmental dimension of sustainable development is the weakest component in terms of contribution of the SMEs sector. The great number of SMEs and their expansion in the region (urban or rural residential areas) makes their environmental impacts serious. There are many factors playing an important role in this field as follows:

1. The financial burdens of waste treatment, recycling and environmentally sound technologies in the short term, furthered by the decreased competitiveness due to increased market prices. There is no doubt that the small enterprise, because of its small capital and limiting finances, can not incur the high cost of treatment or recycling process alone, the matter, which harms the environment (Howahi 1995).
2. Many of these enterprises create hazardous waste that gets discarded of in an indiscriminate fashion since there are inadequate disposing facilities and lack of regulation or enforcement (Howahi 1995).
3. Management considerations are the same for urban and rural enterprises. However, some activities and conditions are unique to the different contexts. Urban environmental issues (mainly pollution) are more likely to immediately affect the residents' quality of life. Urban issues will also be different since many enterprise activities are unique to cities (Howahi 1995).
4. Difficulty obtaining high quality of raw materials. One of the most constraints facing SMEs especially in developing countries towards sustainability is to attain high quality of raw materials. Since, in the absence of co-operation among SMEs, each SME is forced to cover its needs from raw materials, which are in most cases not available locally, by itself, the matter which increases the cost of these materials over the capacity of SME. The domestic alternative of raw materials is low quality and its use leads to lose great ratio of raw materials. In both cases the chance of SME to produce competitive products decrease (Howahi 1995).
5. Poor quality of plant and equipment. Most of SMEs in developing countries suffer from retardation of used plant and equipment. This causes wasting of raw materials and environmental pollution and in the same time leads to low quality of products (Howahi 1995).

#### **2.4 General overview of SMEs in the national economy of Egypt**

The phenomenon of the slow growth of global economics, away from the current differentiation among the economic systems and the levels of development, has led to increasing awareness about SMEs and their importance, as well as the designing of policies aiming to support them, particularly that the rate of survival and continuation is still selective, and the risks of shortcomings and insolvency are still expected in all fields of industry (Arabian Work Organization 1994).

The current circumstances show that the SMEs still have a role they can play to absorb a significant part of employees resulting from the economic reform policies, which were adopted by most countries to avoid the effects of economic crisis and stagnation. Among these policies is taking procedures towards privatization and its consequent effects, like great numbers layoffs of employees and decreasing the government intervention in the institutions work and encouraging the individual initiatives. All this aforementioned further paved the way for SMEs to play an effective role in the economic development either in the developing countries or in the developed ones. So, SMEs have attracted now more employees at the expense of the giant enterprises, after they were regarded before as a part from heritage of a backward economy. In addition there are expectations and hopes in most world countries that more job opportunities and investments, and thus economic development will be generated through the growing reliance on the individual initiatives and through reinforcement of the role of the private sector (Arabian Work Organization 1994).

Recent studies show that the proper investment of capital in a SME creates more job opportunities than the investing of the same capital in a big manufacturing enterprise. These SMEs are also more practical in the countries with abundant employees combined with lack of capital. Since, these small enterprises serve as a place of creating job opportunities and thus reinforcing the status of such SMEs as a tool and a mechanism for fighting unemployment and restricting the unorganized work. In addition to the role of SMEs in generating a fair distribution of income and the power of purchase, as well as the fair and balanced distribution of employees among the various economic sectors. The SMEs proved efficient in limiting the rural immigration into urban areas and in decreasing accordingly the phenomenon of slums areas around the large cities which cause several social, environmental and security problems due to the spread of such unplanned communities. The SMEs have played an effective role in creating manufacturing decentralization which provides job opportunities in invariably all areas regardless of the nature of the area, which helps to create the proper investment of resources, and mobilizing the capital and reactivating the national savings. In this context we will try to highlight the role of SMEs in Egyptian economics and the importance of this sector in terms of the number of enterprises and employees compared to other sizes of enterprises (Arabian Work Organization 1994).

#### 2.4.1 The importance of the industry sector in the Egyptian national economy

The SMEs in general play a key role in the Egyptian national economy. According to the annual statistics issued by the Central Agency for Public Mobilization and Statistics (CAPMAS) for the year 2002, the SMEs represented about 97.7% of the total number of enterprises in the sectors of the key economic activities in Egypt, with the number of its employees making up 64.13% of the total number of employees at the national level, while the large enterprises represent a rate which does not exceed 1% of the number of enterprises in addition that their share of employees at the national level does not exceed 23%. Table (2.4) illustrates the proportional distribution of the number of enterprises and the number of employees divided by the volumes of the key economic activities in Egypt:

**Table (2.4): Distribution of the employees and the enterprises at the national level according to various sizes by industry sector in Egypt 2002**

Size of enterprises	The Enterprises		The Employees	
	Number	Percentage	Number	Percentage
<b>Small enterprises</b>	2321007	97.70	11658688	64.13
<b>Medium enterprises</b>	44059	1.85	2515932	13.84
<b>Large enterprises</b>	7899	0.33	1661152	9.14
<b>Very large enterprises</b>	2759	0.12	2343231	12.89
<b>Total</b>	2375725	100	18179003	100

Source: Adopted by the researcher based on data issued by the CAPMAS in 1996 and the estimation in 2002, and enterprises data published by SFD in 2002.

According to the statistical data published by the CAPMAS in year 2002, the industry sector in Egypt is regarded as one of the most important sectors of economic development, if not the top of all. Since, the employees in this sector make up a rate estimated at 36% of the total employees at the national level according to the recent statistics for the year 2002, followed by both the services and agriculture by a rate ranging from 28 to 29%, while the trade sector comes at the tail of the list at a rate not



exceeding 6%. In terms of the number of enterprises, the industry sector also exceeds the other sectors with a rate reaching 43%, then come both the sectors of trade and services with a rate ranging from 22 to 23 %, while the agriculture sector comes at the last with a rate not exceeding 12% as shown in Table (2.5).

Meanwhile, the value of manufacturing production, according to the recent estimation issued by Information and Decision Support centre of Cabinet Ministers in Egypt for the year 2003 - 2004 in Egypt has exceeded 260 milliard Egyptian pounds (45.2 milliard \$), while the value of production in the agriculture sector did not exceed 140 milliard pounds for the same year . As for the tourism sector, the returns accrued for the same year hit 33 milliard pounds. In general, the industry sector comes at the top of the priorities of the sustainable development in terms of its influence on the national economy on one hand, and in terms of its effect on the environment on the other, especially in the SMEs sector which makes up a great bulk of the industry sector in general either in terms of its employees or in terms of the number of facilities as will be shown later.

**Table (2.5): Distribution of the employees and the enterprises according to various classes by major economic sectors in Egypt 2002**

Economic sectors	Enterprises		Employees	
	Number	Percentage	Number	Percentage
<b>Agriculture, Hunting, Fishing &amp; Forestry</b>	275115	12	5121951	28
<b>Mining, Manufacturing, Construction &amp; Quarrying</b>	1012619	43	6577318	36
<b>Service activities(includ Tourism)</b>	533307	22	5324149	29
<b>Commerce &amp; Trade activities</b>	554684	23	1155585	6
<b>Total</b>	2375725	100	18179003	100

Source: Adopted by the researcher based on data issued by the CAPMAS in 2002.

#### **2.4.2 Contribution of SMEs in terms of employees and enterprises by Manufacturing sector in Egypt**

The last published data by CAPMAS 2002 indicate that, 97% of the total enterprises in the manufacturing sector in Egypt are small enterprises, while 2.17% of these enterprises are medium enterprises, also ratio does not exceed 0.76% are large and very large enterprises. On the other hand, 48.27% of total employees in the manufacturing sector work at small size enterprises, while 27.07% of these employees work at very large enterprises, 13.65% work at medium enterprises and 11% work at large enterprises, see table (2.6). The total evaluation of the SMEs, either in terms of the number of enterprises or employees, not only reflects as to how important these industries are, either at the level of the industry sector or at the level of the key economic activities in Egypt.

It also enables us to forecast accurately the future of this sector and its ability to take in employees and generate actual job opportunities. Whereby, there are many factors which are influential in this regard, among which are the growth rate of SMEs compared to other sizes of industry, and the rate of the generating incomes of SMEs in comparison with other sizes of industry. Among these factors also is keeping an eye on the faltering SMEs and taking notes of their numbers and cases, as well as the causes of their failure.

Last but not least, it comes the degree of social insurance and conditions of work safety secured by an SME for its employees. All these factors aforementioned enable us to judge eventually the degree of seriousness of these SMEs in providing suitable job opportunities. However, most of these factors are not recorded at the national level, and getting them requires field studies at the national level, which will need large number of researchers, and will take a very long time and a very high cost. Thus the researcher has selected only one region in Egypt as a case study to get this necessary information.

**Table (2.6): Distribution of the employees and the enterprises according to various sizes by manufacturing sector in Egypt 2002**

SizeEnterprises	Enterprises		Employees	
	Number	Percentage	Number	Percentage
<b>Small &lt; 20</b>	982812	97.06	3175077	48.27
<b>Medium &lt; 100</b>	21958	2.17	897813	13.65
<b>Large &lt; 500</b>	5700	0.56	723724	11.00
<b>Very large &gt; 500</b>	2150	0.21	1780704	27.07
<b>Total</b>	1012620	100	6577318	100

Source: Adopted by the researcher based on enterprises data published by CAPMAS, annual statistics of the same year

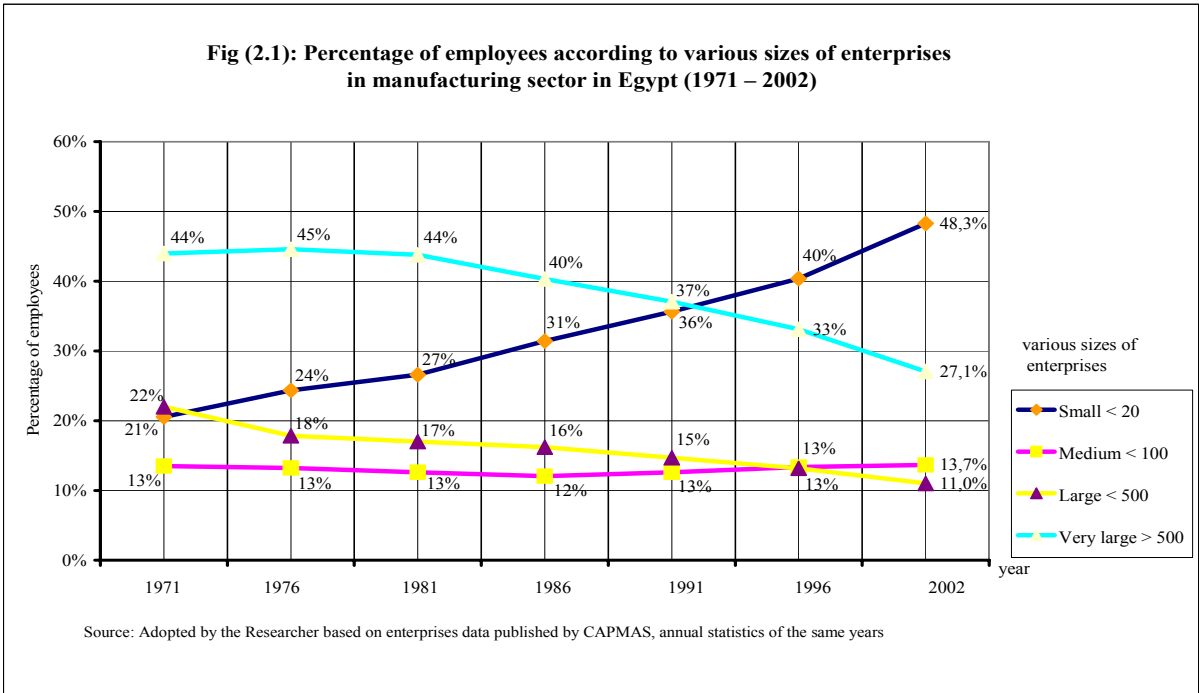
in the absence of available information and data at the national level concerning the factors and indicators aforementioned, it would be relied in this study on one indicators namely: the growth rate of employees and enterprises of SMEs in comparison with other sizes of enterprises. This indicator provides sufficient data about SMEs and their role to provide suitable job opportunities at the national level vis a vis the other sizes of industry. The other indicators will be dealt with through analyzing the results of the field studies experimented in Ismailia governorate.

#### **2.4.3 History of evolution of the SMEs, in terms of employees and enterprises within the industry sector in Egypt and its implications**

Anyone who traces the history of evolution of the industry sector in Egypt as of the seventies until the end of year 2002 sees remarkable changes in the structure of this sector. One even sees leaps in the growth rate of the SMEs, either in terms of the number of enterprises or the number of employees compared to the other scales of industries especially those gigantic ones; see Fig (2.1), (2.2), (2.3) and (2.4). This no doubt has something to do with the policy adopted by the state at the time. Since, the period as of the year 1974 until now has been designated as the era of the open door policy (liberalization), in which the state started to transform from the ideology of totalitarianism and public property to that of individual one and to privately owned enterprises.

We can divide this period into specific phases. The first was the period which preceded 1974 which was marked by the totalitarian rule where the opportunities were more proper for the public sector and the gigantic companies to play the key development role either in terms of the degree of income or the job opportunities. This period also was marked by the retreat of the SMEs in the development process either in terms of the state of facilities or the employees , since the total employees in the SMEs then did not exceed 21% of the total employees of the industry sector, while the gigantic industries

contributed with a proportion of about 44% of the total employees in the sector which was estimated at 1.71 million employees, while the number of the SMEs enterprises stood at 25000 ones out of 38310, the total number of the manufacturing sector.



At the turn of 1974 until the mid eighties, the state started to launch political and economic reforms by opening the door before the Arab and foreign investments which were banned at the era of the ex regime, in addition to opening the door before the export of the Egyptian products.

In the early seventies, the trend towards liberalization was accelerated regarding this new policy of 'Open door' which was declared in 1974. This trend was operationalized by law 43 of 1974 (known as the law of Foreign and Arab Investment and Free Zones) in which foreign investment was encouraged and was offered various sorts of incentives. The government promoted a mixed economy comprising an efficient public sector and a substantial free private manufacturing sector. The law was subsequently amended to offer Egyptian private investors the same privileges offered to foreign investors (law 32 of 1977), Private capital was called upon to play a more active role in economic development and in revitalizing the public sector by increasing competition in the market and encouraging joint ventures between public and private capital. In this new approach and for the first time since mid 1950s, the government overtly encouraged the participation of the private sector in manufacturing activities<sup>12</sup>.

As liberalization was being put into practice, several other measures were approved by the government. The banking system was reformed and more freedom in import and export was given to the private. The export sector was thus encouraged and the merits of an export-led economy were advocated with the state-led ISI still in practice. To encourage export and attract savings of Egyptians working abroad, the Egyptian pound was devalued and a parallel market of currency was established, allowing the forces of the market to determine the exchange rate of foreign currencies (Zaalouk 1989). Moreover, private sector enterprises were allowed to import goods that had previously been reserved for public sector companies.

<sup>12</sup> For more information see <http://www.sis.gov.eg/En/Economy/intro/EconomicReform/050101000000000001.htm>, 23.03.2004.

Additionally, Law 43 created the General Organization of Investment and Free Zones to screen and approve all investment applications. The law also made provisions for the enterprise of free manufacturing zones to attract investments in particular areas, where enterprises would be exempted from Egyptian taxes and import duties, and allowed to transfer capital abroad without restriction. Private free zones could be created exclusively for one project or might cover a whole city (such as in the case of Port Said). Also, enterprises operating in these areas would be able to sell in the Egyptian market at international market prices. It is worth mentioning that the already highly subsidized Egyptian market made it difficult for free zone enterprises to sell in local markets at a profit.

Regarding law no.43, the area of work started to expand before the private sector to live side by side with the public sector. This new economic atmosphere reflected, in turn, on the SMEs whose share in the employees soared to 24% in 1976, then 27% in 1981, hitting an annual growth rate of 12% and 5.5% respectively. This growth rate of SMEs was regarded as a massive growth rate compared to that of the gigantic enterprises which reached, in the same year, about 8.6% and 3.3% respectively. When it comes to the manufacturing enterprise, the comparison is almost similar: in the SMEs, the manufacturing enterprises doubled to reach 25000 ones, then 60000 ones in 1971 and 1976 respectively, at an annual growth rate hitting 19.1%, then further soared to reach 95000 ones in 1981, at an annual growth rate of 9.6%, while the immense industries achieved an annual growth rate in the mentioned years which did not exceed 2.8%.

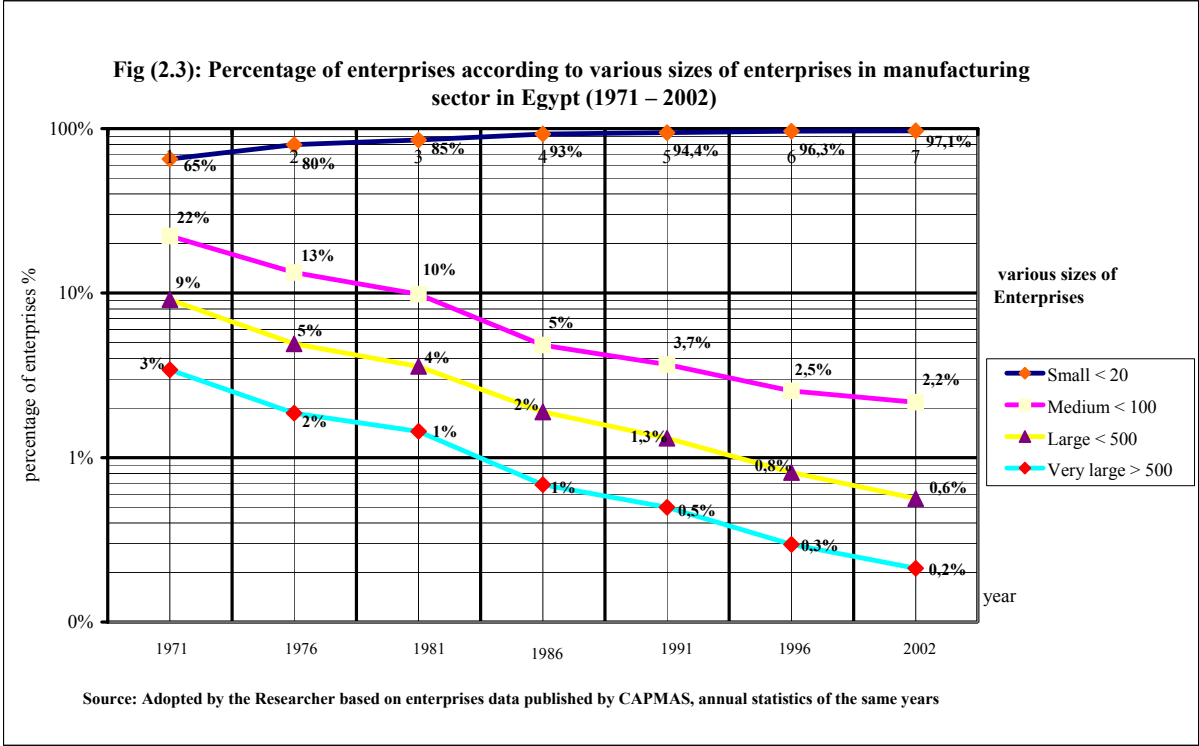
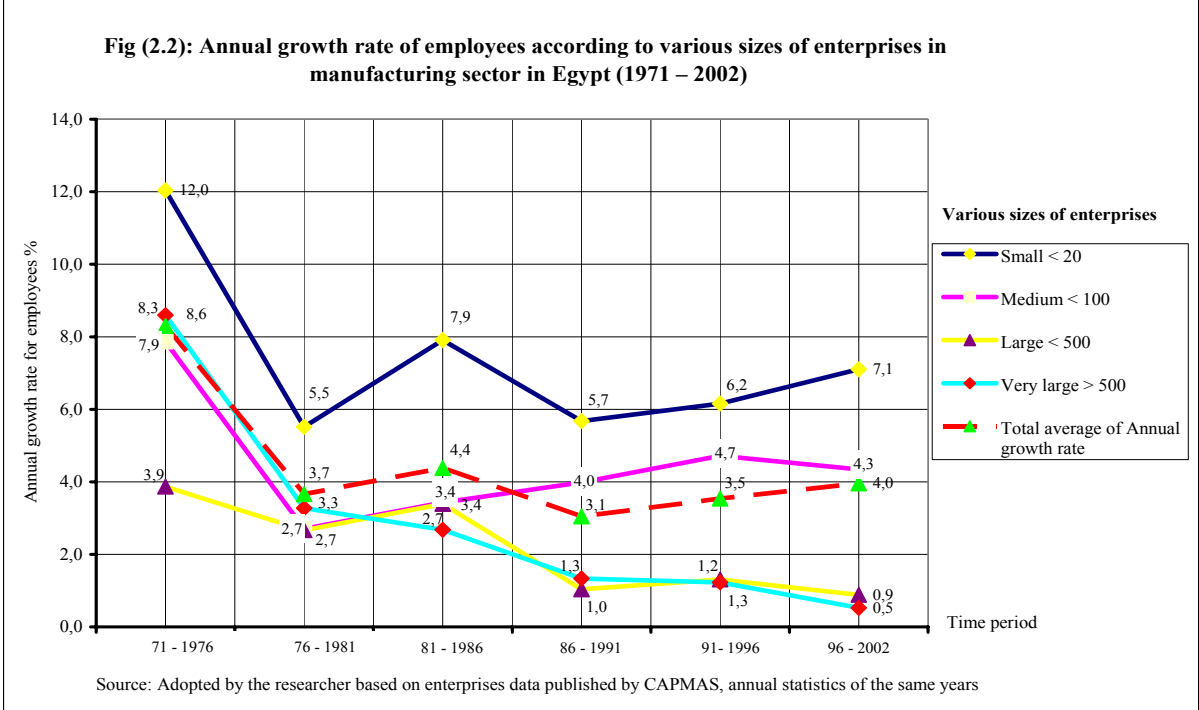
Therefore was the return to Comprehensive National Planning (1982- 1990), proceeding on the Open Door Economic Policy, and encouragement of investment. Investment Law No. 230 was issued in 1989, to replace Law 43 of 1974. The new law managed to improve investment climate with an attempt of implementing programs for economic, financial and administrative programs through a series of procedures and policies.

In this context, significant impacts were observed in the industry sector. The enterprises of SMEs increased from 85% in the year 1981 to 93% in the year 1986. Also, the percentage of employees of SMEs augmented from 27% to 30% for the same years. During the same time, the enterprises and employees of the very large and large enterprises significantly decreased from the year 1986 to the year 1981. A very small reduction was observed for the enterprises and employees of the medium enterprises. See Figures (2.1 and 2.3).

Started in 1990 through the present time, that stage came within a framework of change into market economy mechanisms via a series of policies to deal with the monetary and structural disorder. Foremost among policies adopted were: free interest rate, reform and free exchange rates, enterprise of a free market for foreign currency, implementation of privatization programs and setting free the Public Sector and External trade.

During 90s decade, Egypt launched a change from directed economy into free-market economy, which resulted in reducing the deficit in the budget cutting down inflation rate to less than 3%, not to mention achieving stability of exchange rates. In addition to adopting the free trade policy, Egypt stemmed out all restrictions and obstacles of investment. Privatization was drawn to most banks and more than 50% of Public Sector companies, which contributed to raising the growth rate to 5%. During the period from 1991 through 1997, Egypt managed to achieve success in its Economic Reform Program. The Egyptian Economy was moving forward when it faced some difficulties, due to

impacts of the world economy since 1997. The then economic crisis in East Asian countries, led the world economy into a period of slow performance. Therefore, the Egyptian Economy faced a set of challenges that were represented in high rate of deficit in budget and higher credit rates, and, meanwhile, reduction of revenues of oil's foreign currency. Despite these challenges the Egyptian government could control the budget deficit through many economic procedures and legislative reforms in the fields of taxes, customs and some key economic laws<sup>13</sup>.



In 1991, Egypt had established the Social Fund for Development, which has been designed as a social safety net associated with the government of Egypt's agreement to undertake its extensive Economic

<sup>13</sup> <http://www.sis.gov.eg/En/Economy/intro/EconomicReform/05010100000000001.htm>, 23.03.2004.

Reform and Structural Adjustment Program (ERASP). Therefore, the Fund was considered essential to the actual success of the reform program. Serving as a vanguard of economic empowerment, quality human resources, and an enabling environment for human development, SFD has successfully developed into a full-fledged organization with a new development perspective: it consolidates mechanisms for better understanding of the impact of globalization and mobilizes efforts to minimize risks of social exclusion, help alleviate poverty and combat unemployment. In this capacity, it creates employment opportunities for start-up entrepreneurs and provides them with credit, technical assistance, skills, and technological know-how both Egyptian and international<sup>14</sup>.

One of the most important tasks entrusted with this fund is to support and finance the SMEs in preparation to do without a great part of the employees in the public sector on the heel of the economic reform. This fund has contributed to financing about 174813 SMEs until 2002, providing job opportunities estimated at 651563 ones, which reflected in turn on the SMEs sector either in terms of employees or the enterprises<sup>15</sup>. Any one who traces the experiment can see the leaps which emerged in this sector either in the annual growth rate of the enterprises or the employees in comparison of the gigantic industries.

The SMEs sector represented 36% of the total employees in the industry sector, at an annual growth rate reaching 5.7% in 1991. This ratio further soared to 40% in 1996, and continued to soar until it hit 48,3% in 2002. The sector registered high growth rates throughout these phases in comparison of the other sizes of industries, ranging between 5.7% to 7.1%, while the gigantic industry continued their decline in terms of the employees in the public sector industry, nosedived from 40% in 1986 to 37% in 1991 and further nosedived until it reached to 33% in 1996 and finally to 27.1 % of the total employees in 2002. Meanwhile, the gigantic industries sustained low growth rate for the same years mentioned, ranging between 1,3% annually in the period between 1986-1991 to 05% annually in the period between 1996-2002.

The situation did not change much at the level of the manufacturing enterprises for the same period, in which the SMEs also hit a high growth rate compared to the other sizes of industries, ranging between 9.4.5% annually between 1986 and 1991, and it reached 7.1% annually in the period between 1996 and 2002. At the time when the growth rates in the very large industries stood at a rate ranging between 1.2% and 0.6% annually in the same periods respectively. See Fig (2.4).

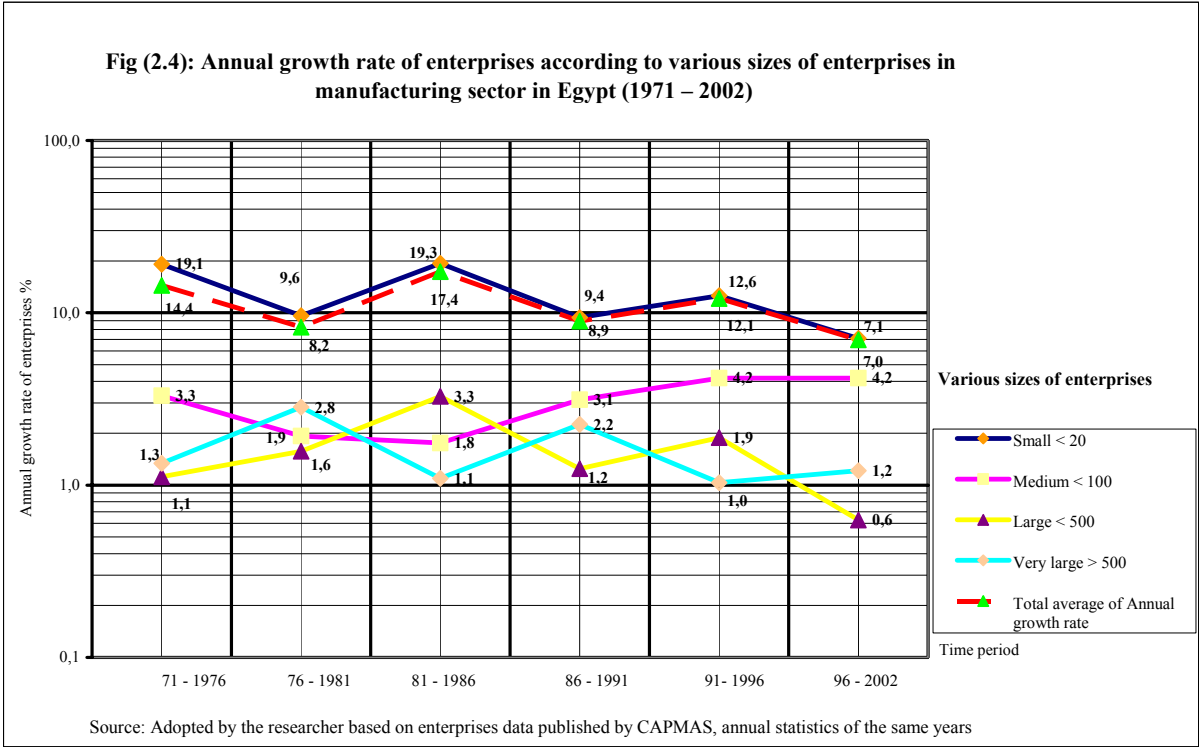
These indicators only show the great role played by the SMEs to absorb great part from the unemployment resulting from the reform policies of economy in Egypt, at the time when the role of the big companies declines. The larger enterprises rely mainly on the sophisticated technology which does not need many employees. So the SMEs resolves a big social problem on one hand, and on the other hand there are doubts on the ability of SMEs to compete or continue, as well as their ability to take part in furthering added value in the national economy in general and in the manufacturing sector in particular. More, the great number of SMEs, which have reached about one million ones, draws our attention to the danger of ignoring such enterprises or dropping them from the issue of the sustainable development in Egypt. Since, they may be regarded as a two edged weapon, i.e. they may be dangerous to the environment and may greatly influence in the process of development. So this study highlights these enterprises and recognizes its implications and problems, as well as the role which

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<sup>14</sup> For more information about the SFD in Egypt see the following web site: <http://www.sfdegypt.org/about.asp>, 15.08.2003.

<sup>15</sup> See the Annual report of Social Fund for Development of Egypt in the year 2002 and the web site of <http://www.sfdegypt.org/publications.asp>, 15.08.2003.

they may play to achieve an effective development role, while keeping an eye on the negative effects which these SMEs may bring in and how to avoid them.



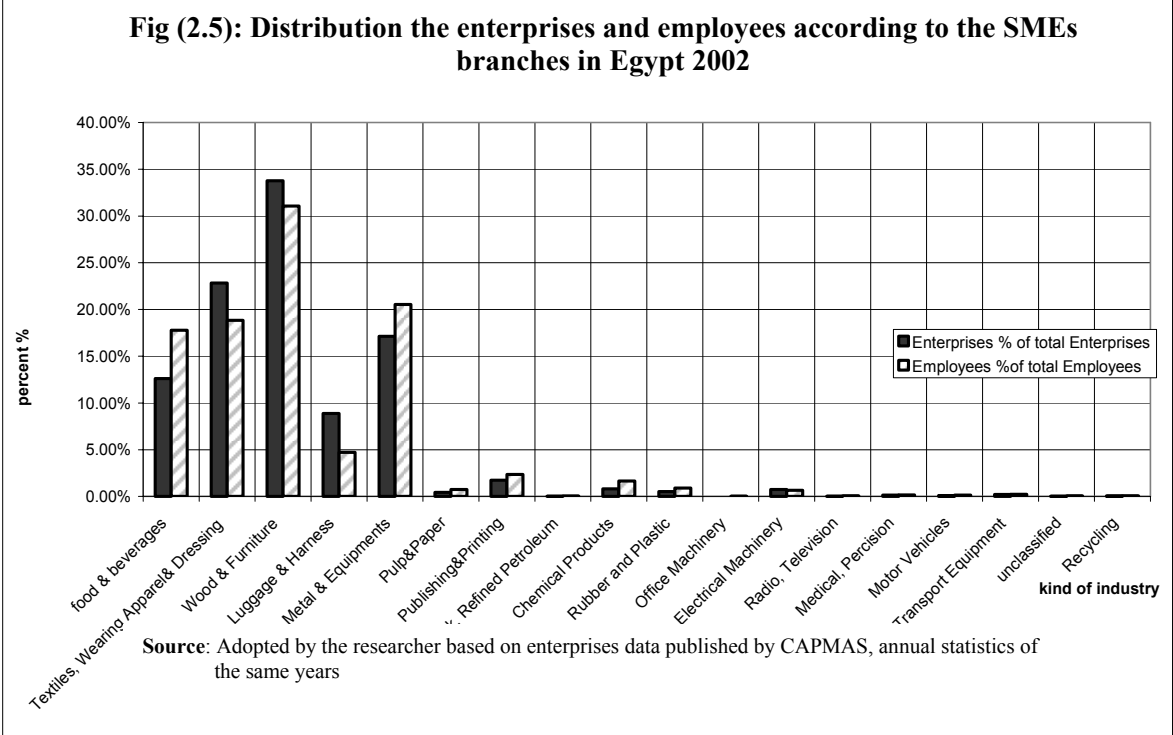
The question which has emerged now is: Do the employees and facilities in these SMEs concentrate in specific kinds of industry? If so, another question will pop up: why this concentration in specific areas in favour of specific works, and is this concentration of specific jobs and areas have a good effect in the long run, will this help provide more job opportunities or this will cause redundancy in these sectors which may cause great stagnation within these kinds in particular, and eventually it may cause the loss of several job opportunities and enterprises? The answer to this question could be the topic of another study not here. But the fact which we must heed to is that the more employees and enterprises in favour of specific small industry, the more attention we should pay to the effect of these types of SMEs on the environment and on the sustained development, which is the pivot of our study now. Following is a detailed review of the role played by the SMEs in terms of the number of employees and enterprises according to the kind of industry at the national level in Egypt.

**2.4.4 Distribution the types of SMEs according to the number of enterprises and employees**

According to the classification made by the Egyptian CAPMAS , the SMEs in Egypt are distributed to 18 types of industry. Table (2.7) illustrates these industries in terms of the number of enterprises and employees therein. This table illustrates that the wood and furniture industries came first in terms of the number of enterprises and their provision of employment, since they reached 331795 enterprises at a ratio of 33.76 % of the total number of enterprises in the SMEs sector at the national level. As for the employees of these industries, it reached about 986225 employees at a ratio of 31.06% of the total employees in the SMEs sector at the national level, while the textile and clothes came second in terms of the number of enterprises at a ratio of 22.8%, comes third the metal industries at a ratio of 17.12%, with the food industries coming fourth at a ratio of 12.6%, while the luggage and Harness industry

came fifth at a rate of 8.9%. The industries from the sixth to the 18<sup>th</sup> have small rates ranging between 1,7% in the case of publishing and printing to 01% in the case of office machinery industry .

In terms of employees, the situation did not change much. Since the wood industry, as mentioned before, came first with a ratio of 31.06%, while the metal industries came second at a ratio of 30.55, the textile and clothes industry took part with 18.84% occupying the third grade in terms of the employees after it was in the second grade in terms of the number of enterprises. The food and beverages industry remained in the fourth grade at a ratio of 17.8%. In the same order but in different rates, the luggage and harness industry came fifth at a rate of 4.7%, then came the Printing and Publishing industry in the sixth position at a ratio of 2.35%. The other kinds are between the seventh and the eighteenth at approximated ratios ranging between 1.7% in the case of chemical products industry until 01,% in the office machinery industry. Fig (2.5) illustrates the distribution of the ratios of the SMEs according to the number of employees and enterprise s, and according to the sort of industry at the national level in Egypt in year 2002.



Reading the figure and table above shows that, the SMEs, in terms of employees and enterprises, concentrate in four industries kinds at the level of the republic. These kinds of industries are the wood and furniture industry, textile and clothes industries, metal industries then the food industries. We are not discussing here the motives behind the concentration of employees and enterprises of the SMEs in these kinds to the exclusive of others, either these motives are economic or social or historical. What matters here is that the concentration of the SMEs in these four kinds means that they have been more favoured than the others and it is a significant motive to study these kinds and their direct effects on the sustainable regional development.



**Table (2.7): Distribution of the enterprises and employees according to the branches of SMEs in Egypt 2002**

Branches of SMEs	Enterprises		Employees	
	Number	Percentage	Number	Percentage
Food & Beverages	123862	12.60	564460	17.78
Textiles, Wearing Apparel & Dressing	224392	22.83	598169	18.84
Wood & Furniture	331795	33.76	986225	31.06
Luggage & Harness	87296	8.88	149879	4.72
Metal & Equipments	168250	17.12	651786	20.53
Pulp & Paper	4238	0.43	23460	0.74
Publishing & Printing	17026	1.73	74732	2.35
Cock, Refined Petroleum	201	0.02	1219	0.04
Chemical Products	8089	0.82	52377	1.65
Rubber And Plastic	5077	0.52	28625	0.90
Office Machinery	66	0.01	360	0.01
Electrical Machinery	7155	0.73	20764	0.65
Radio, Television	251	0.03	1888	0.06
Medical, Precisions	1384	0.14	5236	0.16
Motor Vehicles	815	0.08	4479	0.14
Transport Equipment	1977	0.20	7306	0.23
Unclassified	287	0.03	2221	0.07
Recycling	651	0.07	1892	0.06
<b>Total</b>	<b>982812</b>	<b>100</b>	<b>3175078</b>	<b>100</b>

Source: Adopted by the researcher based on enterprises data published by CAPMAS, annual statistics of the same years

## 2.5 Conclusion and results of the chapter

This chapter summarises the following aspects of SMEs – concept and definitions; characteristics and patterns; strengths and weaknesses; as well as the contribution of Small Manufacturing Enterprises (SMEs) to the national economy of Egypt – based upon the previous discussion of small enterprises.

### Concept and Definition of Small Manufacturing Enterprises

There is no universally accepted definition of Small Manufacturing Enterprises (SMEs). The definition of SMEs is relative and varies from one country to another, as well as from one point in time to another within the same country. At the time of this study, there was no unique binding definition of small **manufacturing enterprises** in Egypt. The only existing definitions for these enterprises were those which had been developed by individual institutions. It is not acceptable to have more than one definition of SMEs as was the case of Egypt; inconsistencies arose as a result of differing parameters from which to define “small.” What was defined as “small” by one organization was not by another. Naturally, this type of conflict leads to wasted effort toward the goal of developing this particular sector as a viable economic development alternative. For the purposes of this study and given the current general status of these small entities on the national level, this research suggested that small scale industries be defined as **those enterprises with 20 or fewer employees with capital investments, excluding the cost of land and building(s), not exceeding 500.000EGP (i.e., \$80.839,40 in 2003 US figures). Furthermore, these entities are** subject to the condition that ownership of the entity is independent; that is the unit is not owned, controlled or a subsidiary of any other manufacturing undertaking.

The non-factory system pattern is more suitable for developing countries since this pattern has the ability to easily be dispersed throughout both rural and urban areas; this matter helps to minimize and

decrease immigration to larger cities in these countries. This pattern is more efficient in the case of service-oriented SMEs located within residential area since they generate very low levels of environmental pollution. In the case of production-oriented SMEs, which have more negative effects on the environment, a cluster system pattern should be adopted but only outside of the existing residential areas. Since the cluster would consist of several single enterprise, this would provide two advantages to the enterprises located within this manufacturing cluster. The first advantage would be one of low cost of invested capital for each enterprise in the cluster similar to the circumstances within the non-factory system. The second advantage would be one of low cost of the waste management system similar to the circumstances in a factory system. As a result, the work of SMEs through a manufacturing cluster system would be more efficient than the individual work of unconnected/unlinked SMEs, and this would cost less than the work of SMEs through the pattern of a factory system.

Charles Handy (2002) once compared big organizations to elephants and small organizations to fleas, emphasizing the welcome stability of elephants but the superior ability of fleas to make things happen i.e. to innovate. What Handy meant by this statement was that large enterprises have the power and resources to “make things big” but because they are so geared towards efficiency and control, they are unlikely to be innovative or entrepreneurial. This is the role of small enterprises. Small enterprises do in fact have many characteristics that set them apart from larger ventures such as: personalized management, small market share, customer loyalty, small financial resources and great resilience in hard times.

Regarding the advantages and constraints of small scale industries, there is no doubt that SMEs face some special problems that are not an issue for larger organizations. Small size, however, is not necessarily equal to disadvantages and problems. Many SMEs are much more flexible than their larger counterparts which must meet a great variety of expectations and interests from various stakeholders. Simple structures and few levels of hierarchy encourage a motivating community-like culture and a steady knowledge transfer between all members of the organization. The stable relationships with suppliers and customers, which many SMEs have developed over the years, provide a degree of continuity. Small enterprises have formed ad hoc partnerships, cooperation and networks with other enterprises in order to work on a particular project.

The small scale industries can play a very important role in the national economic field, especially in developing countries because of their large ability to employ an ample number of employees with less investment. Also, small scale industries provide jobs to poorly skilled and semi-skilled employees while helping to decrease emigration to larger cities and achieve population stability because of the ease with which these industries can expand geographically in the inter-regions and rural areas. Small enterprises, in general, are more flexible than large enterprises because they have a smaller managerial hierarchy (Mintzberg 1999). This encourages a motivating community-like culture and a steady transfer of knowledge between all members of the organization. SMEs tend to be very successful in developing niche markets and products, these sectors do not tend to attract larger organizations because of the limited capacity. Small enterprises are therefore free from significant competition. The strengths and weaknesses of small enterprises are defined by their very essence that is having special characteristics that differentiate them from larger enterprises. This difference is what makes them important, since in economic terms it is better not to have all your eggs in one basket.

There are many social, economic and environmental constraints that affect the production system of SMEs. SMEs provide job opportunities for rather unqualified employees. However, they do not provide suitable social insurance; nor do they ensure sufficiently safe manufacturing security measures. Both, of which, can threaten the future of these industries in the long term. The limited capital for small industries and inconsistent supply and demand structures with associated high market risks can prevent small industries from playing such a vital role in enhancing the regional development in the long-run. The small investments dedicated to the small industries' capital could threaten the capability of the small enterprises to continue and survive in the long-run. This would, consequently, lead to the loss of many job opportunities, both directly within and indirectly outside a particular industry. Furthermore, this failure would certainly influence the chain of economic activities within the region. The production processes incorporated within small industries have serious environmental impacts. These impacts are attributed to the lack of environmental awareness as can be seen from the manner in which these organizations make use of available raw materials (i.e., these are not used to their best advantage.) and energy without any regard for the resulting harmful influences on future generations coupled with the absence of production control mechanisms. In fact, some small industries in the region have become a permanent threat to the environment. The spread of SMEs inside populous residential areas together with their large numbers maximizes their negative environmental impacts.

Small enterprises are vitally important to the Egyptian economy since it accounts for 97.7% of all enterprises and provides approximately 64.1% of employment in the country. SMEs are an important player in essential sectors without which the Egyptian economy could not survive. The contribution of SMEs in the Egyptian national economy was not born overnight, but it grew larger over time in the long-run and as a result of policy adopted by the state throughout different eras. This began with totalitarian rule which tended to encourage public ownership. This rule lasted until the year 1974 at which time there was a shift to an economic “open door” policy that encouraged foreign investments. With the mid-seventies, came the passing of a chain of economic reforms restructuring, as well as economic adaptation, thereby, encouraging individual enterprise initiatives and enterprises privatization from the mid-eighties until present. These changes resulted in a large number of layoffs in the governmental sector which prompted the SMEs, in general, and small industries, in particular, to employ the greatest part of laid-off employees. Thus, SMEs succeeded in curbing the problem from layoffs which would have led to a serious economic and social problem within the Egyptian society.

In spite of the great role played by the SMEs in assimilating more employment, they do not receive the due care on the national level that is deserved; the services rendered to them are not proportional to the substantial role they play. There is not a clear policy for enhancing the incorporation of these enterprises in an effective and well studied way within the Egyptian national economy relative to the market needs. Such policies and programs should be based on relevant market analyses that identify the gaps between supply and demand which these enterprises can fulfil. There are also no programs to protect these enterprises from bankruptcy or failure so closure and rendering employees jobless can become an unfortunate consequence. In spite of the high growth rate of these SMEs compared to the volumes in other enterprises, either in terms of employment or enterprises, SMEs lose far more job opportunities than large- or medium-size enterprises. Although, it is difficult to prove this at the national level, due to the inaccuracy of data available about SMEs in Egypt, it is a visible reality confirmed by field studies that will be explained in the empirical portion of this thesis.

## **Chapter 3: SMEs and sustainable urban and regional development (Conceptual approach)**

### **3.1 Introduction**

Since the first World Summit of sustainable development which was held in Rio in 1992, sustainable development has expounded as a new model of development. This new model of development aims to integrate economic growth, social development and environmental protection as interdependent and equally supportive pillars of long-term development. Sustainable development emphasizes a participatory, multi-stakeholder approach to policy making and implementation, mobilizing public and private resources for development and making use of the knowledge, skills and energy of all social groups in terms of the future of the planet and its people (Nitin, 2002)<sup>16</sup>.

Sustainable development implies economic growth together with the protection of environmental quality, each reinforcing the other. The essence of this form of development is a stable relationship between human activities and natural resources, which does not harm the chances of future generations to have a quality of life at least as good as our own. Democracy and public participation are the most important tools for achieving sustainable development (Mintzer 1992).

Sustainable urban and regional development has a number of special characteristics. It is a very dynamic process and has multi-dimensions which include not only environmental, but also social, economic, and political-institutional dimensions. Sustainable urban and regional development brings the crucial linkages between cities on their environment at the local, metropolitan, regional, national and global levels under-one heading. It thus provides, for example, a framework for dealing with the environmental impact of cities and their hinterlands, or with the economic relationships and ecological linkages between town and countryside (Eigen 2002). By taking this wider view, sustainable urban and regional development moves beyond sterile arguments about urban versus rural, accepts the reality of urban growth and migration among human settlements, and concentrates on the effective management of the process. The central challenges facing sustainable urban and regional development are poverty reduction, gender inequality, and deprivation. No development will be sustainable unless it successfully addresses these issues.

The most important aim of sustainable regional development is to achieve equilibrium between resources and population in all regions in the country, especially in developing countries which are suffering from inefficient distribution between their population and natural resources. This means that economic and social dimensions are crucial for sustainable urbanization in human settlements of all sizes. Based upon the World Summit for sustainable development and the outcomes of other major United Nations conferences, the eradication of poverty is essential for sustainable human settlements, particularly in developing countries where poverty is acute.

Small and medium enterprises (SMEs\*) are considered one of the most important economic sectors in a nation's economy, especially in developing countries. Because of their contribution in the field of employment creation and waste generating at the regional level, SMEs are considered one of the biggest players in the context of sustainable regional development. Many goals of sustainable regional development such as economic growth, poverty alleviation, the achievement of equilibrium between

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<sup>16</sup> [http://www.un.org/esa/sustdev/publications/critical\\_trends\\_report\\_2002.pdf](http://www.un.org/esa/sustdev/publications/critical_trends_report_2002.pdf), last check was 16.08.2004

\* In this dissertation the abbreviation SMEs is used in different ways according to the specific context. In chapter 1, 2, 3 the term refers to small and medium enterprises in general, whereas in chapter 4, 5, 6, 7 the term is used as abbreviation for small manufacturing enterprises of which most are micro enterprises.

resources and population could be implemented by SMEs. SMEs can help to decrease emigration to large cities and achieve population stabilization because of their ease with which they can expand geographically within inter-regions and rural areas. Also, SMEs can provide jobs to poorly skilled and semi-skilled employees. This means that SMEs help to enable vulnerable groups, particularly in developing countries, to attain suitable job opportunities and consequently to improve their living standard. They are a source of innovation and entrepreneurial spirit, and they create competition and are the seed for enterprises of the future (Hillary 2000).

In this chapter we will begin to highlight the relationship between SMEs and sustainable urban and regional development through a discussion of related issues such as: the concept of sustainable development, the sustainable regional development agenda in Egypt and regulations and characteristics of SMEs necessary to achieve sustainable urban and regional development.

### **3.2 The concept of sustainable development**

The expression sustainable development was coined to demonstrate that economic growth and environmental protection can be compatible (Munasinghe 1995). Development is not completely synonymous with economic growth, which gives mainly attention to real incomes. A narrow definition of sustainable development would indicate that per capital income or wellbeing is constant or increasing over time. The wide concept of sustainable development is less precise and embraces set of indicators of wellbeing (including income) that could be maintained or increase over time (Holdren 1995).

The World Bank in its World Development Report 1992, states that sustainable development means basing developmental and environmental policies on a comparison of costs and benefits and on careful economic analysis that will strengthen environmental protection and lead to rising and sustainable levels of welfare (World Bank 1992). In order for informed choices to be made economic, ecological and social factors all need to be considered and presented to decision makers in an unambiguous fashion.

Regarding the environmental literature (e.g. Turner et al . 1994), this is basically a ‘weak’ definition of sustainable development, involving a shift from looking at sustainable development in terms of environmental limits to one more focused on managing growth. Inserting ‘high and stable levels of economic growth’, in particular, gives a strong impetus to those wishing to ensure environmental concerns did not detract too much from pursuing a national growth strategy.

‘Win-win’ solutions are said to be those which encourage policymakers to think creatively about ways in which policies might achieve both environmental protection and economic development objectives. Politically they are attractive because they offer the possibility of finding solutions where everyone is a winner, although in practice it is not to be quite so simple (Rydin and Thornley 2001). By the end of the 1990s, the terminology had moved on, with ‘win-win-win’ introduced, and incorporating the social goals of planning alongside the economic and environment. Indeed, addressing economic, social, and environmental objectives at the same time, rather than giving priority to one over another, is at the heart of Labour government approaches to sustainable development.

In this context we will try to reach to accurate concept and definition for sustainable development from its different approaches and we will try to understand the meaning of this terminology in the domain of urban and regional development.

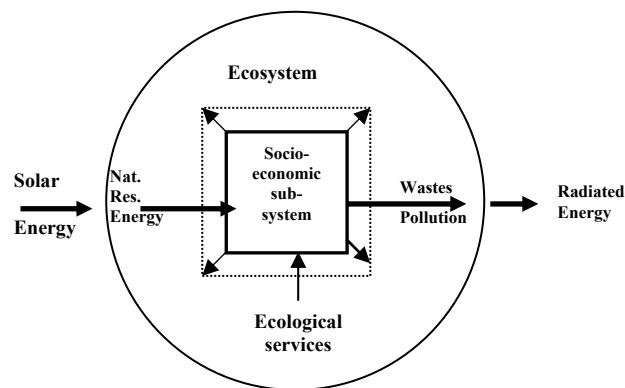
### 3.2.1 General ideas about sustainable development

Probably the best known and frequently quoted definition of sustainable development is provided in the Brundtland Report as “development that meets the needs of the present without compromising the ability of future generation to meet their Owen needs” (World Bank commission on Environment and Development 1987, p.8). This definition is anthropocentric and based on the concept of intergenerational equity.

An economist’s working definition of sustainable development could be “the maximization of net benefits of economic development, subject to maintaining the services and quality of natural resources over time.” This implies that renewable resources ( especially scarce ones) should be used at rate less than or equal to the natural rate of regeneration and that the efficiency with which non-renewable resources are used should be optimized, subject to how effectively technological progress can substitute for resources as they become scarce (Pearce 1990).

Sustainability has also been defined as “a relationship between dynamic human economic systems and larger dynamic, but normally slower changing ecological systems, in which: A- human life can continue indefinitely, B- human individuals can flourish, and C- human cultures can develop, but in which D- effects of human activities remain within bounds, so as not to destroy the diversity, complexity, and function of the ecological life support system “(Costanza and Wainger 1991). See Fig. (3.1).

**Fig (3.1): The Ecological System**



Note: the capacity of the ecosystem may become overloaded by the growing socioeconomic subsystem (the broken lines).

Source: Munasinghe 1993

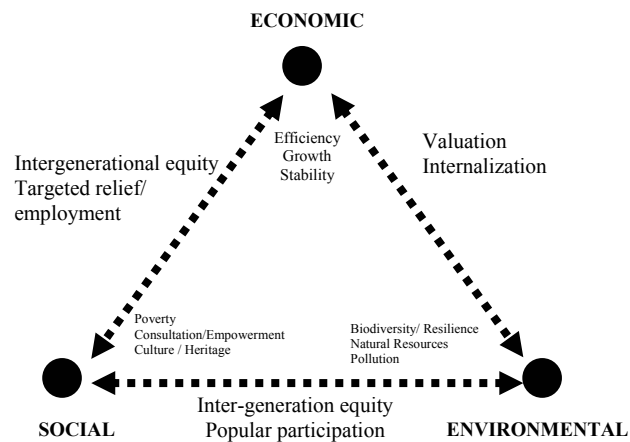
### 3.2.2 Dimensions of sustainable development

We might identify three broad dimensions for sustainability, as shown in Fig. (3.2). Economists relate sustainability to the preservation of the productive capital stock. Physical scientists relate sustainability to the resilience or integrity of biological and physical systems<sup>17</sup>. A third view relates sustainability to a concern about the adaptability and preservation of diverse social and cultural systems<sup>18</sup>. This section provides a brief overview of each in turn.

<sup>17</sup>Perrings, C., Reserved rationality and the precautionary principle: technological change, time and uncertainty in environmental decision making. In *Ecological Economics: the Science and Management of Sustainability*, Ed. R. Costanza. Columbia Univ. Press, New York: 1991, pp 153-166.

<sup>18</sup> Toman, M.A., “The Difficulty in Defining Sustainability”, *Global Development and the Environment: Perspectives on Sustainability*, J. Darmstadter, Ed., Resources for the Future, Washington, DC, USA, 1992.

**Fig (3.2): Approaches to Sustainable Development**



Source: Munasinghe 1993

**First:** The economic dimension of sustainable development is focusing on income as the maximum flow of benefits possible from a given set of assets, without harming the flow of future benefits. This requires the conservation of the base of assets over time. A society that invests in reproducible capital, the competitive rents on its current exhaustible resources, will enjoy a consumption stream constant in time. A suitably defined stock of capital including the initial endowment of resources is being sustained intact, and consumption can be interpreted as the interest on patrimony. The constant stream is one interpretation of intergenerational equity. The natural capital from perspective of this dimension must be taken into account, in addition to man-made capital and human-resource capital to achieve sustainability.

**Second:** Sustainability from environmental perspective is linked to the idea that dynamic processes of the natural environment can become unstable as a result of stresses imposed by human activity. Sustainability in this scenario refers to maintaining a system's stability, which implies limiting the pressures to sustainable levels on ecosystems that are central to the stability of the global system (Perrings 1991). This idea is related to protection of the resilience of fragile ecosystems through the maintenance of natural capital. Ecological sustainability basically implies the preservation of biodiversity at a sustainable level.

In terms of energy consumption, there is no doubt that, energy is one of the most important factors for sustainable development. It accesses all of our daily activities. The use of energy must be done with rational way. It is important to indicate that Industrialised societies use a great deal more energy per person than those in the developing world. Much of this energy comes from non-renewable sources such as fossil fuels (coal, oil and gas). These fuels are being used at a much faster rate than they are produced, and may be unavailable to future generations. In addition, the environmental effects of energy production from fossil fuels can be harmful.

These include the greenhouse gases which may cause global warming, and sulphur dioxide and nitrogen oxides, which leads to acid rain. It is necessary for these fossil fuels to be preserved for the future, and for renewable energy sources to be introduced. Renewable energy sources include solar power (energy from the Sun), wind power and hydroelectric power (using water, often via a dam to generate electricity). Renewable energy creates very little pollution and is not likely to run out.

Agenda 21 requires countries to increase the proportion of energy supplied by environmentally sound and cost-effective systems, particularly new and renewable ones (Alsaead 1999).

Sustainable development means from this dimension protection of natural resources against human stresses and decreased using fertilization and pesticides which polluted the ground and the underground water. Also it should be reduce the over use of forests and fishes. Sustainable development means using agricultural lands and water efficiently by use progress agricultural technologies which increase the crops and avoid the over use of chemical fertilizers and pesticides.

As well as, the sustainable development means saving water consumption and keep the water and the ecosystems balanced. This means also, preservation of animals and plants kinds from extinction, which faces for example: Orbital forests, environmental systems of coral-bells and fauna and biodiversity. Sustainable development means from this dimension too, stop or control of industry impacts, which lead to great changes in global temperature and destruct the ozone layer, which protect earth from the ultraviolet rays (Alsaead 1999).

**Third:** Social and cultural aspects are very important and vital factors in terms of sustainable development. Within socio-cultural systems ethical values, beliefs, institutions develop to meet human needs. The world is in an era of extremely rapid change, when new institutions are being created to deal with natural resources, based on socio-ethical values about the environment. One of the most important challenges of the coming decade is developing sustainable social and cultural practices to assist manage renewable resources (Munasinghe 1995).

Sustainable development from a social aspect means guaranteeing the basic needs of the population, such as healthcare, education and clean water; this includes improving the living standards and protecting cultural-diversity. It involves investing in human resources to increase the efficiency of employees and specialists in all fields by establishing training centres and re-qualification programs (Alsaead 1999). It also aims to achieve social integration and poverty eradication by creating productive employment opportunities which are compatible to the human capabilities and available resources.

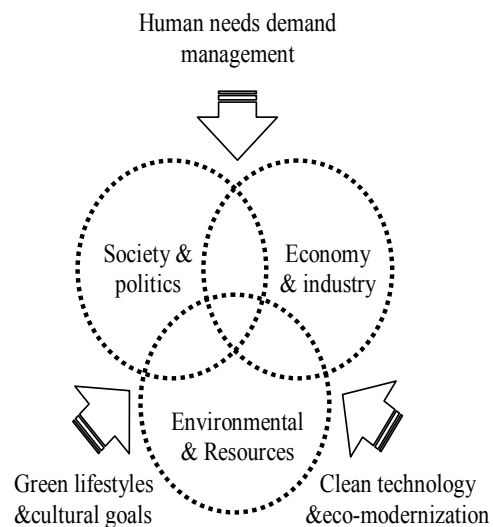
The social dimension of sustainable development, especially in developing countries, concerns slowing down migration from the rural areas to the urban areas, and stabilizing the population growth rate to achieve equilibrium between people and resources. Population migration from rural to urban areas in developing countries usually strains the cities by having a negative impact on services, employment and transportation which leads to decreasing the living standards in these cities. Generally the reason behind this migration is the search of suitable job opportunities and better living conditions (Alsaead 1999).

SMEs and their ease of geographical expansion in rural and urban areas play a very important role to alleviate this migration which will lead to the population stabilization in the whole region; consequently SMEs will contribute to realize some social goals of sustainable regional development.



### 3.2.3 Sustainable urban and regional development

Bringing together environmental sustainability with urban and regional development the concept of urban and regional sustainable development becomes a rich mixture indeed. Ravetz 2000 has defined urban environmental sustainability as “the balance of urban systems with their long-term environmental resources base”. It should be noted that sustainability is a direction not a fixed goal. While, urban development: “the evolution and restructuring of urban systems in their global context” – is also a direction, not a goal. Summing up the first and second definition will convey an accurate definition of sustainable regional and urban development as “actions which steer the evolutionary process of urban development’ towards the moving balance of environmental sustainability” (Ravetz 1998 pp. 8). Regions and cities are considered as providers of economic, social and environmental functions – as shown by the well known three – ball sign (Fig 3.3).



**Fig (3.3): Sustainable regional development concept**

Source: Ravetz, 1998

Sustainable regional and urban development has three dimensions: environmental, economic and social. As the environmental dimension, sustainable urban and regional development should be utilized carefully to reduce the environmental impact and resource use to sustainable levels, and enhance environmental quality and safety. Regarding its economic dimension, it should be carried out to enhance long-term resilience, competitiveness, employment, and equitable distribution of resources. As for its social dimension, it should focus on enhancing health, education, and security and living conditions. Each of these influences the other; environmental protection is essential for all human life. Economic development is needed for environmental protection, and social progress is needed for a stable economy. Actions that hit the bulls-eye or the overlap between three circles are the win- win strategies that attract support from all sides. In reality, however, there are many win – lose strategies solving one problem while creating others (Serageldin 1993).

Sustainable urbanization has both a short-term and a long-term perspective: it is concerned not only with current problems; it also looks ahead, to deal with future issues and situations, not only in relation to the environment but also in combating poverty and social exclusion. Sustainable regional and urban development aims at balancing the natural resources and regional activities.

The growth rate of regional activities should be in line with the environmental carrying capacity and environmental threshold of this region which means that within a specific country, regions will be created with high potentials to absorb regional activities and regions with limited potentials to absorb these activities. The local authorities’ role is to intervene by attracting people to the first type of regions (regions with high potentials to absorb regional activities) by offering attractive incentives (Graham 2004).

### **3.3 Sustainable regional development in Egypt**

Since its Revolution in 1952, Egypt's economic policy converted from a socialist system with central government controls to dominating of public sector and policy of liberalization with a bigger role for the private sector. The main goals of these policies were always to enlarge the provision of social services, to increase the productive capacity of the economy and promote manufacturing development in order to create enough jobs (Handousa and Potter 1991). But, until recently none has given the due attention to the related environmental issues.

The population of Egypt increased from 41.7 million in 1980 to 70.0 million in 2005 and could arrive at 88.6 million in 2020<sup>19</sup>. The rapid population growth jointed with aspirant manufacturingization policies with no attention to the related environmental consequences. This has put a heavy pressures on the Egyptian environment represented in the severe pollution of air, water and soil. Egypt today is paying a heavy price for the decades of environmental neglect which has affected its economic growth and the health of its population. But since the early nineties, the environmental situation has changed with the government's commitment to consider environmental issues (El- Kholei 1999).

Since Rio 1992, Egypt is engaged in a sustainable development process. The definition and implementation of the sustainable development strategy of Egypt has required an open dialog at the national, regional, and local levels between the various actors of the environment sector (public-private-citizens). That dialog resulted in the identification of environmental problems specific to each region, the analysis of the causes and effects, and the proposition of preventive and curative solutions. That led to the first phase of elaboration of the Official Report on the Environment of Egypt adopted by the Government in 1992. The official report is the environment charter of Egypt. It is a document of reference and orientation for any actions in favour of the protection of the environment called the National Environmental Action Plan (El- Kholei 1999).

The National Environmental Action Plan of Egypt (NEAP) has prepared her at the first time in preparation for the Rio Earth Summit. The updating of this NEAP which was finished in 2002 reflects the changes that have taken place, both within Egypt and globally, in the intervening years and takes into consideration what was agreed at Rio and beyond, namely that environment is one of the three components of sustainable development and has to be considered within that context. NEAP represents Egypt's agenda for environmental actions for the coming fifteen years. It complements and integrates with sectoral plans for economic growth and social development. NEAP is the basis for the development of local environmental initiatives, actions and activities. It is designed to be the framework that coordinates for future environmental activities in support of sustainable development of Egypt.

#### **3.3.1 Evolution of environmental dimension**

Looking back on the past, two phases of environment and development can be recognized in Egypt. The first phase (from the Egyptian Revolution to the end of the 1980s) is a separation of the environment from development. This stage of environmental neglect distinguished with the really rational exploitation of natural resources at the expense of a rapid and un-sustained physical development. During this phase, heavy and polluting industries were built along the Nile and manufacturing states were created starting from Aswan in the South (Kima Fertilizer Company and Misr Aluminum Company) passing by Cairo (Helwan and Shoubra El Kheima) and ending in

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<sup>19</sup> CAPMAS, Annuals Statistical Book for the Same Years and the Prognosis for the Year 2020.

Alexandria in the North (fertilizers, and refineries). The heavy fuel with high sulphur content was used to operate all power plants and heavy industries. The High Dam in Aswan led to great change of Nile silt deposition on the land. So, the dependence on fertilizers was used in a very large way. This caused several environmental problems such as soil pollution and deterioration of surface water and groundwater quality. In terms of environmental institutions, the Ministry of Water Resources and Irrigation (MWRI) was the ministry in charge of implementing the Water Sector Law No. 48/1982, related to pollution control of water resources as well as the Sector Law No. 12/1984, governing the management of water resources in the irrigation and drainage systems. As a coordinating body reporting to the Council of Ministers in 1982, the Egyptian Environment Affairs Agency (EEAA) was established. EEAA was concerned primarily with the protection of the marine resources in Sinai as well as monitoring water quality (World Bank 2005).

From the early 1990s to date the second phase of environmental concern started. This phase is defined as a transitional phase of reconciliation of environment with development in Egypt. The Government of Egypt (GOE) passed the first National Environment Action Plan (NEAP) in 1992. NEAP which was prepared with the support of the World Bank and international donors marked a turning point in tackling the challenge of environment and development in Egypt. It was the first policy tool that has mobilized the Government and international donors' efforts towards addressing major environmental issues in this country and building its environmental infrastructure (World Bank 2005).

Egypt endorsed the first Environment Protection Law No. 4/1994 which supported the EEAA as the national environmental institution responsible for formulating policies, coordination, observation and implementation. Recognizing the importance given to the Environment, exactly in 1997, Egypt has established a Minister of State for Environmental Affairs (MSEA) to be the representative of the Environment in the country, to control and manage all of environmental activities and chair EEAA Board of Directors. In addition during 1992-2002, total environment-related expenditures amounted to \$46.2 billion and including very large subsidies on water, energy and transport amounting approximately to \$40 billion. As a result, the state of the environment has partially improved particularly in water supply, waste water treatment and solid waste management, and in decreasing air and water pollution (World Bank 2005).

In spite of the great improvement which was achieved during the 1990s in terms of environmental protection, Egypt still faces two main challenges: First is overcoming the course of environmental degradation; and second in doing so, guaranteeing that environment is integrated in all policies, projects and programs of development. Both challenges mean for Egypt that, environment work is not a luxury but a necessity to protect the natural resources for the next generations. The Egyptian government adopted in very clear terms in its report of the environment strategy in Egypt until the year 2017, the principles of sustainable development through environmental integration in policies and projects, improving environmental governance, Non-Government Organizations (NGOs) and civil society, strengthening the role of women in environment protection, improving water and air quality as well as securing natural protectorates (World Bank 2005).

### **3.3.2 Sustainable development in Egypt – general overview**

Generally Egypt had achieved some progress in terms of sustainable development. After 1996 Egypt has adopted UN-HABITAT agenda, which contained the following seven main programs:

- 1- Providing adequate shelter for all people;
- 2- Social development and eradication of poverty;

- 3- Management of environment;
- 4- Economic development;
- 5- Improving the local authority management;
- 6- Promoting Global Co-operation;
- 7- Future initiatives.

The Egyptian report for evaluation of the progress in implementation of the Habitat Agenda, which was published by the UN in the Habitat conference (Istanbul + 5)<sup>20</sup>, indicated that, Egypt made some progress towards achieving its Millennium Development Goals (MDGs) targets. In terms of providing adequate shelter for all people, significant improvement was achieved. Egypt did efforts and still to enabling all people to attain suitable dwelling. To achieve this target Egypt adopted two strategies: the first one is developing and up grading slum areas. Thus, the country has developed and upgraded 254 slum areas with the help of the inhabitants. Currently, 432 from 1197 slum areas are in process of upgrading. It means that, 57% from the slum areas in whole country are upgraded or under developing.

The second strategy is the creation of new cities in the desert to reduce the population pressure from the narrow Nile vally. Thus, about 90% of the population in Egypt is living on only 5% of the total area of Egypt. This led to many environmental problems such land degradation, water and air pollution. So, the new settlements aim not only to provide adequate shelter for all people but also aim to redistribute the population and achieving the equilibrium between the resources and population. These new settlements are complete societies with all the necessary services, suitable housing for all classes of population and biasing economic activities for each settlement as well. Despite of these efforts, the official statistical data about the housing state in Egypt indicates that, about 20 % from the housing in Egypt are not contacted to the general network of electricity, while only 53.7% of them have a contact with general water network, whereas 30% of housing in urban areas and 50% of rural areas have no contact with the general network of sanitation. In general, the attaining of adequate shelter is considered one of the indicators of sustainable urban and regional development<sup>21</sup>. In the framework, this research will test the capability of the employees in SMEs in the study area to attain adequate shelters in comparison with the previous situation of Egypt.

In terms of social development and eradication of poverty, population who are living below \$1/day representing about 7%; however, 20% in 2000 down from 25% in 1990/91 are living in lower poverty (below 2\$/day) (World Bank 2005). Improvements in youth literacy and net primary enrolment were made towards achieving universal primary education though 43% of the population above age 15 is still illiterate. Gender equality is being promoted with significant improvements in education of females and in job opportunities. Significant reductions in children under 5 mortality rate was achieved (53.7/1000 at year 1991 to 28.6 at year 2004) and in infant mortality (less than one year) rate (36.2/1000 in 1991 to 22.4 in 2004). There are also indications of improving maternal health; however, there are still incomplete data on combating HIV/AIDS and other diseases<sup>22</sup>.

Poverty and education are very important indicators for the social dimension of sustainable regional development. To verify, if the SMEs succeeded in the case study to generate suitable incomes for their

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<sup>20</sup>See Ministry of Housing, Utilities and Urban Communities, Sustainable human settlements: the National Report of Egypt, UN-HABITAT conference: (Istanbul+5), New York, 2001.

<sup>21</sup> See Ministry of Housing, Utilities and Urban Communities of Egypt, 200. op. cit.

<sup>22</sup> See Ministry of Housing, Utilities and Urban Communities of Egypt, 200. op. cit.

employees and to prove how SMEs can affect positively the educational status of their employees, the research will test these indicators in the environment of SMEs in the case study in comparison with previous situation of Egypt.

In terms of management of environment, the country made some progress towards achieving its environmental goals. Egypt works to increase its water resources and in the same time works to save consumption of water, the matter which helps to achieve the water security for its next generations. Currently Egypt develops data base system about the disasters areas to mitigate the negative impact of disasters on human settlements, national economies and the environment. Also, Egypt make data base program for the safety areas, which can accommodate the future development programs. Egypt works to redirect inappropriate new development and human settlements to areas not prone to hazards. Egypt implements nowadays transportation projects to promote active and safety networks. These projects (tunnels – bridges) will help to decrease traffic crisis. At present, Egypt works to use clean energy (natural gas) in public transport facilities. Generally, Egypt works to entrance the environmental dimension in the development policies and in the national programs and plans towards achieving sustainable urban and regional development<sup>23</sup>. This chapter will try to explain the reflection of these new policies towards the environment in the field of SMEs.

In terms of economic development, Egypt worked to strengthen and support small and micro enterprises. Also, it encourages the contribution of private sector in all of economic and social fields. Egypt adopted the economic reform policy, the matter which gave the private sector a chance to play an important role in the process of economic development. The national report of Egypt said that, SMEs in Egypt, like any other developing countries, need to suitable support to play their development role at the national and regional level<sup>24</sup>. The research see that, the support of SMEs without taking into consideration their environmental impacts and without putting an environmental plan to treat these impacts, may be dangerous to the environment and may greatly influence the process of sustainable development in the long run. So, to avoid their harmful environmental impacts, the support of SMEs should be not only financial but also technical.

In terms of improving the local authority management, Egypt, until the last decade, had adopted the centralization concept in plans and development decisions, although there is a local authority law. This law gives wide governance for local communities to manage their public utilities and services and to embark upon the whole domains of ministries in the light of national public policies. Currently, the country starts to activate this law and works to fulfil the contribution of popular participation in the process of sustainable development, but the decision in Egypt is still very central. That means, the plans, suggestions and recommendations are maybe not central, but the implementation must be adopted from the central authorities. Also, Egypt achieved some progress in improving the local authorities. The computer systems, training and technical assistance were implemented in most departments of these local institutions.

In terms of promoting global co-operation, Egypt gives very important attention for cooperation with the different nations of the world in the light of new globalization system and new local and regional changes. Also, Egypt works to promote the global cooperation and participation, the matter which lead

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<sup>23</sup> See Ministry of Housing, Utilities and Urban Communities, Sustainable human settlements: the National Report of Egypt, UN-HABITAT conference: (Istanbul+5), New York, 2001.

<sup>24</sup> See Ministry of Housing, Utilities and Urban Communities, Sustainable human settlements: the National Report of Egypt, UN-HABITAT conference: (Istanbul+5), New York, 2001.

to positive returns on the human and socioeconomic development in the country. Egypt is considered also, main partner in most global and international agreements regarding the environment and sustainable development<sup>25</sup>.

Regarding the future initiatives, Egypt had seated several future initiatives and plans to achieve sustainable development in the long and short term. These initiatives are regarding the shelter, sustainable urban development, local authorities and communities and small scale enterprises<sup>26</sup>. For more details about these initiatives, review “appraisal of the Implementation of the Habitat Agenda, national report of Egypt, UNCHS (Habitat), New York 2001”.

### **3.3.3 A new approach (2000 – 2015) to environmental sustainability**

With Egypt's engagement to sustainable development and its attempt to achieve its first objective of environmental sustainability in the Millennium Development Goals, the adoption of a new approach for clear articulation between environmental policies with overall economic policy is very important. Also, there is a need to ensure that, the environmental considerations enter the development planning process at an early stage. Such strategic approach towards sustainable development involves a new way of thinking and working in Egypt so as to move: First, instead of focusing on inputs (projects, laws) to output-oriented outcomes (impacts of projects and legal changes); second, from a top-down approach and centralized decision making into a system of information sharing, and improved governance; and finally, shifting from a process of measuring performance to track actions and accommodating learning (World Bank 2005). To ensure that environmental protection will be embedded into local planning on equal basis with economic concerns, it needs to integrate the National Environmental Action Plan (NEAP) in the five year of development planning process. Also, it requires increasing the level of environmental awareness through the encouragement of consumer awareness initiatives and community based environmental intervention, in addition using of the advantages of the renewable sources of energy (PARC 2002).

As a new approach of sustainable development and environmental protection, Egypt adopted 8 major goals wish to be achieved by 2015, these goals are as follow:

1- Eradicate extreme poverty and hunger. Thus, Egypt aims to halve, between 1990 and 2015, the proportion of people living in extreme poverty (People, whose income is less than \$1 per day) and those suffering from hunger by 2015.

2- Achieve full basic education. Egypt plans to ensure that by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary and preparatory schooling.

3- Promote gender equality and empower women. Egypt plans to eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015

4- Reduce child mortality. Egypt wishes to reduce under-five mortality rate by 2/3 between 1990 and 2015.

5-Improve reproductive health. Egypt wishes to reduce the maternal mortality ratio by 3/4, between 1990 and 2015.

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<sup>25</sup> See Ministry of Housing, Utilities and Urban Communities of Egypt, 200. op. cit.

<sup>26</sup> See Ministry of Housing, Utilities and Urban Communities of Egypt, 200. op. cit.

6- Combat HIV and AIDS. Egypt hopes to halt by 2015 and begin to reverse the spread of HIV and AIDS.

7- Combat malaria and other diseases. Egypt plans to halt by 2015 and begin to reverse the incidence of malaria and other major diseases.

8- Ensure environmental sustainability. Thus, Egypt aims to integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources. Also, Egypt plans to halve by 2015 the proportion of people without sustainable access to safe drinking water and to achieve by 2020 a significant improvement in the lives of at least 100 million slum dwellers.

Poverty reduction is one of the most important goals on the top of the Egyptian Agenda of sustainable development, because of its closely relation to this thesis, it will be illuminated in the following context.

Regarding poverty reduction, Poverty was the central theme of Egypt Human Development Report (EHDR) 1996. To measure poverty this report used three poverty lines: First, Food Poverty Line which is used as a proxy for the less than \$1 per day; second, Lower Poverty Line which is used to estimate the number of people unable to afford the cost of essential food and other basic needs requirements, such as education; third, Upper Poverty Line which is used to reflect actual consumption expenditures of the poor, that are not limited to essential needs. Depend on such approach; poverty in the Egyptian status may not be classified as extreme in the universal sense. Using the methodology of EHDR 1996, if the ultra poor are officially estimated at 7% of the population, those under the "lower poverty line" are estimated at 20% in 2000 down from 25% in 1990/91(PARC 2002).

The major challenge Egypt faces in the following years towards poverty reduction is that, more than 40% of the population is young and requiring jobs to meet the needs of more than 600,000 graduates per year (PARC 2002). The challenge will be greater when considering policy of the Economic Reform from the early 90s, which leads to loss a big number of job opportunities in the public sector in Egypt. To face such challenges, the government has recently embraced a "Pro-Poor Strategy". Along such lines, multiple strategies to spur economic growth in Egypt are developed, that include promoting the wide range of small and medium size enterprises and offering micro-credit to the ultra-poor, in addition to better targeted direct transfer. Applying the theory of redistribution with growth has not only necessitated addressing poverty, but also called for poverty-oriented research and policy formulation which target the asset-poor (PARC 2002).

In this atmosphere, and based on the statistical data about the contribution of economic sectors in the field of employees and enterprises at the national level in Egypt which is published by (CAPMAS) in the year 2002 it is estimated that, the sector of SMEs in Egypt is required to cover at least 100000 job chances per year gradually (CAPMAS 2002). This number of jobs can be absorbed in not less than 10000 enterprises. This shows the importance of SMEs for the Egyptian economy in one hand, and in the other hand shows the danger of neglecting of these enterprises and takes them out from the quotation of sustainable development and environmental protection in Egypt. Because of their ease of geographical expansion whether in rural or urban areas, SMEs can play a very important role in terms of poverty reduction. But it is very important to review all of organizing legislative and regulations of

these enterprises in terms of environmental protection, to avoid their negative impacts on the environment. The following context will discuss this point in details.

### **3.3.4 Policies and legislations directing the environment of SMEs**

The Egyptian experience is very poor in terms of legislative for SMEs, although the importance of these enterprises for Egyptian economy. Egyptian environmental legislations apply to all industries regardless of their size. From an environmental point of view, the great number of SMEs may make their impacts on the environment more dangerous than the larger industries. Indicators for pollution size are:

- Pollutant load (flow rate x concentration)
- Type of impact (hazardous/non-hazardous)

Egyptian environmental laws are specific to concentrations; they do not address the problem of load. As long as the effluent concentration meets law requirements, there is no restriction on flow rate, although high pollutant load could be expected. Generally, SMEs comply with laws of manufacturing enterprise s' no.21 for year 1958 and no.55 for year 1977. Also, they comply with environmental laws No. 48 for year 1982 and no.4 for year 1994. In the same time, judgments of laws of tax and social insurance are applied on this sector. Appendix number (4.1) gives a brief summary of the major laws and regulations related to SMEs in Egypt.

The Environmental Law (Law No. 4 for the year 1994) is considered one of the Egyptian contributions to protect the environment. This law was the direct result for Rio summit 1992. All of the new enterprises or the extension of the current enterprises should respect this law. The current enterprises have to adjust their situations in three years after publishing the executive regulation of this law. This law did not touch directly on the environmental regulations for SMEs, but the law and its executive regulation have submitted classification for all enterprises regarding the degree of the environmental harming. This classification has divided the enterprises into three categories as follows:

- Group (A): Enterprises of the white list, which have few harmful effects on the environment.
- Group (B): Enterprises of the grey list, which have significant harmful effects on the environment.
- Group (C): Enterprises of the black list, which have dangerous harmful effects on the environment.

The previous classification depended on the following factors:

- 1 Type of the activity of the enterprise.
- 2 The volume of used materials and resources like: water, land and mineral wealth.
- 3 The location of the enterprise.
- 4 The type of used energy in the enterprise.

According to the previous classification, most of SMEs are located in the first group, which have few harmful effects on the environment. This classification deals with the impacts of each SME alone, it does not assess the number of SMEs in the same residential area or in the same street or maybe in the same building, which makes their impacts collectively on the environment significant. So, it is very important to set special classification for SMEs concerning their effects on the environment and put the related environmental regulations to avoid the harming effects of these enterprises on the environment.



The social fund of development in Egypt had reclassified SMEs according to their environmental effects to three groups as follows:

- 1- Group (A) contains the low polluting SMEs;
- 2- Group (B) contains the medium polluting SMEs;
- 3- Group (C) contains the high polluting SMEs.

The trying of the social fund to classify SMEs regarding their environmental effects is considered a useful one in this field

The social fund had stated the necessary regulation for each group to protect the environment as shows in Table (4.1).

**Table (4.1): The environmental regulations of SMEs according to their pollution degree**

Regulation of Group (A)	Regulation of Group (B)	Regulation of Group (C)
<p>Every enterprise should have the following:</p> <ul style="list-style-type: none"> <li>• Source of water supply.</li> <li>• System of sanitation and industrial draining.</li> <li>• Suitable fire control devices.</li> <li>• Enough sources of natural ventilation.</li> </ul>	<p>Every enterprise should have the following:</p> <ul style="list-style-type: none"> <li>• Source of water supply (from the public network).</li> <li>• Public network for sanitation and industrial draining.</li> <li>• Suitable fire control devices.</li> <li>• Enough sources of natural ventilation.</li> <li>• A study of environmental impact assessment of the enterprise.</li> <li>• File of the environmental situation of the enterprise since the start day, the measuring of determinate environmental elements should be taking into consideration one time at least in the year.</li> </ul>	<p>Every enterprise should have the following:</p> <ul style="list-style-type: none"> <li>• Source of water supply from the public network.</li> <li>• Public network for sanitation and industrial draining.</li> <li>• Suitable fire control devices.</li> <li>• Enough sources of natural ventilation.</li> <li>• Suitable mechanical ventilation system to draw out emission of gases from the enterprise.</li> <li>• Suitable work protection tools and conditions for employees like: Gloves, heads protection, especial glasses for eyes, ear protection, breathing protection, first aids and special shoes. A study of environmental impact assessment of the enterprise.</li> <li>• A study of environmental impact assessment of the enterprise.</li> <li>• File of the environmental situation of the enterprise since the start day, the measuring of determinate environmental elements should be taking into consideration one time at least for each three months periodically.</li> </ul>

Source: collected by the researcher, based on information issued by SFD.

The Social Fund of Development (SFD) in Egypt has re-classified the SMEs according to the kind of industry and the related regulations and the special conditions for each industry. The classification list of SFD contains more than 150 industry type of SMEs distributed into 6 main SMEs sectors, but we have selected only the types of SMEs found in the case study (22 industries types distributed into 4 sectors) to compare them with the same types of SMEs, which are contained in the classification list as shown in Table (4.2).

**Table (4.2): Presents special environmental conditions of SMEs according to the type of industry and its pollution degree**

The sector of SMEs	Type of industry	Environmental group	Special conditions
Agricultural and food industries	1- Dough (patties + pasties + slack-baked)	<b>Group (A): Low polluting (white list)</b>	There are no special conditions. But this group should to receive attention for the above regulations of group A.
	2- Milk products (Yogurt + Rice with milk)		
	3- Juice of cane		
	4- Mobilization of foodstuffs		
	5- Products of date palms leaves		
	6- White cheese	<b>Group (B): Medium polluting (grey list)</b>	The liquid waste should be collected and filtered from the organic substances before draining in the public sanitary network. The use of Mazout and other heavy oil products, as well as of crude oil, shall be prohibited in residential areas. The chimney should be compatible with specifications of the environmental law for discharging gases and steams emanating from burning fuel (the height of chimneys serving public places should be at least 3m higher than the edge of surrounding buildings (top of the buildings) in circle, which has a radius not less than 25m and its centre is the chimney) and measures shall be taken to accelerate the speed at which gas is emitted from the chimney. Also, mechanic ventilation system should be taken to clarify the inside air of the enterprise from the substances and steams.
	7- Meats products		
	8- Bakery of brides		
	9- Arabic suits +		
	10- Orient sweets + The sweet made of sesame-seed meal		
	11- Rice polishing		
Wood industries	12- Frames and glasses	<b>Group (A): Low pollution (white list)</b>	There are no special conditions. But this group should to pay attention for the above regulations of group A.
	13- Doors and windows	<b>Group (B): Medium pollution (grey list)</b>	Take the work protection into consideration like: Gloves, heads protection, ear protection, breathing protection, first aids and special shoes. Also, mechanical ventilation system should be there to draw out steams and substances from the enterprise.
	14- Furniture products including painting unit	<b>Group (C): High pollution (black list)</b>	With consider the regulations of Group (C), the rest of pigments and paintings materials should be collected and treated with a safety way.
Metal industries	15- Metals lathing	<b>Group (C): High pollution (black list)</b>	With consider the regulations of Group (C), the liquid and solid waste should be collected and treated with a safety ways. Taking the temperature degree into consideration the according to the environmental law no.4 as follows: 30 - 32.2 if the work is easy, 27.8 - 30.2 if the work is medium and 26.1 - 28.9 if the work is hard.
	16- Metals operating		
	17- Aluminium forming	<b>Group (B): Medium pollution (grey list)</b>	Take the work protection into consideration like: Gloves, heads protection, especial glasses for eyes, ear protection, breathing protection, first aids and special shoes. Also, mechanical ventilation system should be there to draw out steams and substances from the enterprise. The solid waste should be collected and treated with a safety ways.
	18- Wrought iron		
Textile and clothes industries	19 - Sewing ready clothes + Dressmaking	<b>Group (A): Low pollution (white list)</b>	There are no special conditions. But this group should to pay attention for the above regulations of group A.
	20- Carpets		
	21- Furnishing + Scarf		
	22- Textile and clothes pigments	<b>Group (C): High pollution (black list)</b>	With consider the regulations of Group (C), the rest of pigments and paintings materials should be collected and treated with a safety way.

Abdel-Wahaab, R., Small and Medium Enterprises (SMEs) in Egypt: Environmental Profile, Environmental Management & Technology Fund (EM&T) and Egypt Environmental Initiatives Fund (EEIF), Cairo 2000.

The research sees that, this classification is considered to be a good basis to evaluate SMEs in the study area. It gives us a clear image about the theoretical environmental standards which should be respected by SMEs in the reality.

To be aware of the size of the gap between these standards in official documents and in the application in the reality, in the practical part of this research we will try to verify if SMEs are abiding by enforcing these environmental conditions in their enterprises. This comparison will help us to put some suitable solutions to treat this environmental defect in sector of SMEs, which accordingly will lead to sustainable SMEs. This will be reflected consequently on the field of sustainable regional development.

### **3.3.5 Constraints SMEs face towards sustainable development in Egypt**

Limited access to financial resources affects the capability of SMEs to update their old technologies, to engage qualified employees, to penetrate regional markets, to acquire licenses, etc. The complexity of the constraints facing SMEs necessitate that, the development of SMEs should be handled as a national priority that requires the coordination of efforts among all pertinent government and extra-government actors and entities (Abdel-Wahaab 2002).

With respect to environmental compliance, many of the small scale manufacturing enterprises violate environmental laws and regulations. However, enforcement of the law is weak. In a Study under title "Environmental pollution in the field of SMEs in Egypt" published by (Friedrich Ebert Stiftung and the Central Productive Cooperative Union) it was revealed that most of the owners are unaware of environmental pollution and its resulting impacts, although environmental legislation was already issued. The owners deny the violation of the rules of the mentioned laws and ministerial decrees. Owners have mentioned that they did not meet any inspectors of the Egyptian Environment Affairs Agency and only inspectors of Social Insurance Organization visit their enterprises (Howahi 1995). This means that, the monitoring of these enterprises by the environmental authorities is absent. This reflects also that, the environmental problem in Egypt is not relating to endorsing regulations to protect the environment, but it is linking with the implementation of these regulations.

The most important constraint facing SMEs in Egypt and limiting their role in sustainable development process is the great number of official organizations and institutions (59 institutions) (Hefnawy 1998), which take care of these enterprises, the matter which makes large conflict among these organizations. Thus, the efforts, which look forward to support SMEs, will be dispersed, then, the developmental revenues from these enterprises becomes very low. In general, Table (4.3) presents a summary of the major financial and non-financial constraints affecting SMEs towards sustainable development

In general, there are many problems and constraints facing SMEs toward sustainability. These problems are varying from one industry to another and from one country to another, albeit these problems have something in common, mainly that they disable SMEs to achieve sustainable development within the region. So the thorough diagnosis of these problems is the first stage of remedy. In this framework this research formulated two questions: First, what are the economical, social and environmental problems facing SMEs towards sustainability? Second, what are the impacts of these problems on the sustainable regional development? The answer of these questions will be given later!

**Table (4.3): Summary of the major financial and non financial constraints affecting SMEs towards sustainable development in Egypt**

Constraints	Summary
<b>Economic constraints</b>	<ul style="list-style-type: none"> <li>• SMEs have limited access to formal capital and financial services necessary to meet their working and fixed capital need. Most financial efforts and programs targeted to SMEs rely on donor and external funding which are not sufficient.</li> <li>• SMEs have limited marketing channels and networks. They are confined to local markets and rely on direct sales to customers. Also, SMEs are considered absent from network of wholesales and training companies to introduce their products to national and international markets. Existing channels are dominated by large enterprises.</li> <li>• SMEs, due to their weak resource base, are unlikely to invest in market research and employ the serves of marketing and distribution networks.</li> <li>• Linkages (i.e. subcontracting) between SMEs and large and foreign enterprises are undeveloped as a result of the poor managerial and technological capacities of SMEs.</li> <li>• SMEs have limited access to public contracts and subcontracts due to existing bidding procedures and / or lack of information procurement laws do not accord SMEs any preferential treatment.</li> <li>• The liberalization of non residential rents may affect SME future development since 84% of SME occupy rented space.</li> <li>• New and under-served manufacturing zones will involve higher production costs for SMEs. These locations also detach them from their main local markets.</li> </ul>
<b>Social constraints</b>	<ul style="list-style-type: none"> <li>• The existing educational and vocational systems do not supply SMEs an adequate supply of trained technicians and employees .</li> <li>• Many of SMEs owners lack the education to tap sources of relevant information for new products, customer trends, technological developments, etc.</li> <li>• SMEs do not face a severe shortage of semi-skilled employees (due to their reliance on the traditional apprenticeship system), but are not able to retain their trained employees .</li> <li>• Trained employees tend to leave the enterprise to start their own enterprises or to obtain another job opportunity in larger industry.</li> <li>• SMEs lack the basic skills in enterprises management, record keeping and access to consulting and support services.</li> <li>• It is reported that only 9 percent of small and medium entrepreneurs have university degrees.</li> </ul>
<b>Environment al constraints</b>	<ul style="list-style-type: none"> <li>• SMEs are unable to upgrade utilized technology, tap on sources of information on market trend, consumer preferences, product specifications, etc.</li> <li>• SMEs have low interest to obtaining foreign technologies and information. They are less able to adapt to these technologies and information to their own use.</li> <li>• The under-development of the technological base of this sector is hampered by regulatory constraints, under-developed linkages with large and more sophisticated partners.</li> <li>• SMEs have limited access to production input, such as high quality of raw materials.</li> <li>• Given poor quality control and product standardization, SME products are not in a competitive position in national and international markets.</li> </ul>

Source: Based on Abdel-Wahaab, R, Small and Medium Enterprises (SMEs) in Egypt: Environmental Profile, Environmental Management & Technology Fund (EM&T) and Egypt Environmental Initiatives Fund (EEIF), Cairo 2000.

### 3.4 SMEs and sustainable regional development

Sustainable manufacturingization will be a central objective throughout the developing world. For the current and future markets in the developing world, it is necessary to create small, decentralized industries of a new kind, using local resources and clean technology to increase productivity and to make products and provide services that satisfy the fundamental needs of local people without destroying the environment (Ashford, 1993). If enterprises want to become sustainable, they must

consider if and how they can promote sustainable living through the creation of work for the sustainable production of goods and services that are needed to improve the lives of people, in the manufacturing, as well as in the developing world, now and in the future. This means the objectives of a company will change. Traditional objectives such as realizing continuity and creating profits have to be confronted with and, if possible, integrated with the objective of sustainable production and consumption (Van Weenen 1999).

The mission of SMEs simply to produce must be transformed into one of fulfilling needs in a sustainable way. This means that even companies who have begun to address the concept of the life cycle (from resource extraction to waste product disposal) of the product have only taken the first steps. They have to go beyond environmental optimization of their product's life cycle stages and question the very need for their product and how they can contribute to sustainable manufacturing development. Rather than operating only with the concept of a product's life cycle, enterprises will have to look at its needs fulfilment cycle which runs through observations - values - needs - response - fulfilment.

### **3.4.1 Characteristics of sustainable SMEs**

Environmental, green, eco-efficient and sustainable are some used terms in referring to organizations which are concerned with environmental issues. The definition and the interpretation of these terms often have different ways to understand. For example, an environmental firm, it can be understood as one having in place a sound environmental policy intended to reduce the impact of its processes and products throughout the life cycles of its products. But it may also simply be a firm which has a waste treatment system.

A European report defined eco-enterprises as: "companies that produce technologies, goods and services to measure, prevent, limit or correct environmental damage to water, air or soil, as well as problems related to waste, noise and eco-systems" (European Report, 1997). One definition of a green enterprise is: One which works towards a cleaner environment, reduced use of natural resources, production of high quality food, and which utilizes an environmentally sound means of production. (Eco-village information, 1996) (Ashford 1993). The World Enterprises Council for Sustainable Development (WBCSO, 1997) believes that an eco-efficient company is one which strives to:

- Reduce the material intensity of its goods and services;
- reduce the energy intensity of its goods and services;
- reduce its dispersion of any toxic materials;
- enhance the recyclability of its materials;
- maximize the sustainable use of renewable resources;
- extend the durability of its products;
- increase the service intensity of its goods and services.

While sustainable enterprise means from my point of view more than these believes. It means social and economic success for the enterprise and its employees. The enterprise, which achieves a success in the field of eco-efficiency while it does not achieve a progress in the economic and social field, is considered a non-sustainable enterprise. The sustainable enterprise should be achieving physical success at the three dimensions with the same grade. According to Robert Ayres a more sustainable enterprise would be one that would go beyond the present thinking related to pollution prevention and

eco-efficiency. In his opinion it has to move towards providing a service, instead of selling a product: In other words it has to move towards internalizing its use of materials or taking them back after use.

### **3.4.2 Resource use by sustainable SMEs**

The first principle of a sustainable SME is that it should constantly focus on understanding the needs. It intends to meet and on finding ever better alternatives for meeting them. A sustainable SME will give priority to non-material ways of meeting needs. If that is not possible, it will concentrate on methods that involve the least possible material input. Thus, sustainable service-oriented SMEs will take the lead in the quest for sustainability (Elsen, 1997).

Without using any material or energy resources or by using as few sustainable resources as possible, the sustainable enterprise will initially meet its elementary needs. Those that are nevertheless required are sustainably derived from the direct natural conditions. This concerns the input of material, energy and information (natural ideas) from the ecosystem to which the enterprise belongs.

This input of course must be used within a carrying capacity of the ecosystem (using a quantity which is less or equal to the annual yield; making use of natural phenomena without seriously affecting them; making use of natural water and returning the water in a quality that is within the absorption capacity of the ecosystem). This is the sustainable and conditional use of ambient resources for production (building, working conditions, input, process and product).

The exchange of resources, products and services on a larger scale, eco-communities, eco-regions or eco-zones is considered necessary, if local resources are not sufficient. Thus, an input is required from another enterprise in an eco-system or in material cultural conditions that are more appropriate to provide the resource sustainably. So, creating a direct link between the prevailing ecosystems is very important to achieve sustainable SMEs. Thus, in areas where the ecosystem is the central factor, SMEs can use local resources, resources from somewhere else and combinations of the two. Whereas in areas where the cultural and material surroundings are more important and the resource situation is quite different, urban SMEs will function (EFILWC, 1997).

An SME should be based on a concept that seeks to reduce significantly its current or potential, direct and indirect material and energy requirements and throughput, if it had not been established with the objective of sustainability. SME should concentrate on vision, knowledge, ideas, experience and information, and focus on the practical realization of sustainable development. A sustainable SME should use the resources by ways that have the least possible environmental impact and the highest possible economic and social revenue. The basis of the manufacturing process and production of a sustainable SME should depend on the location of the resource, the natural conditions and the ecosystems present in the direct surrounding area of this SME and their sustainable availability<sup>27</sup>.

### **3.4.3 Sustainability promoting SMEs**

As was indicated in the characteristics of sustainable SMEs, such SMEs should be supporting, forming and stimulating sustainable networks, sustainable industries, sustainable communities and sustainable regions. Such strategies are strongly advocated in The Sustainability Promoting Firm, (Sutton, 1998):

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<sup>27</sup> For more details see "Van Weenen, H., 1999, previous reference.

Nine key actions that need to be taken by a sustainability-promoting firm are:

Ser.	The key action	The target
1	Goal	To take on the timely achievement of global and local sustainability as one of its top goals and as a significant area of organizational opportunity.
2	Customer service	To ensure that when products (including services) and production processes are developed or modified to meet the needs of the active users that they are also designed to serve the needs of the local community, people globally, future generations and nature.
3	Management	To implement an environmental management system that enables the organization to help society achieve sustainability in a timely fashion, for example, through the use of leapfrog pioneering strategies.
4	Market	To take action to maximize the market for products that contribute to sustainability and as far as possible favour the servicing of other enterprises and final users that is making a positive contribution to the achievement of sustainability.
5	Products	To change product offerings - to foster sustainability.
6	Operations	To change the way activities are carried out or the way production is undertaken to foster sustainability.
7	Proliferation	To promote the spread of the sustainability-seeking approach generally: through the private, public and community sectors and up and down the supply chain.
8	Cooperation	To cooperate with other sustainability-seeking organizations.
9	Society's rules & structures	To work to change society's rules-of-the-game and structures including the standardized system frameworks for products, so that they favour the achievement of sustainability.

Source: Based on Suttan, 1998.

### 3.4.4 The immaterial and material objectives of sustainable SMEs

A sustainable enterprise is an enterprise that gives solutions for fulfilling elementary needs by producing products or services through the organization and input of human and natural resources, based on a development process which reflects the following immaterial and material objectives (Van Weenen 1999):

- Dedication to the values of the quality of life, the interests of the poor, of next generations and the conservation and enrichment of natural ecosystems. Quality of life of course includes significant work and good quality jobs.
- Acknowledgement and appreciation of the values of human resources, their social and cultural diversity, inside and outside the enterprise. Thus, the developing of human resources by offering sustainable training and re-qualification and providing the social and healthy service to them lead to sustainable development not only at the level of the enterprise or at the local level but also at the regional and national level as well.
- Clearly contributing to provide a sustainable basis to the prevailing production and consumption patterns by:
  - Reducing substantially the level and intensity of the use of natural resources
  - redirecting the using of primary materials and energy resources.
  - Securing and enhancing their future availability and potential.

- Reducing as possible the use of material and energy resources, by using knowledge, skills, human power, talents, and individual or collective social activities and services.
- A sustainable enterprise reduces not only its overall contribution but it considers its related impacts on the resources and environment as well. A sustainable SME should reduce with priority the use of resources that mostly contribute to depletion, a high resource use level and also much pollution and environmental degradation. This means that the resources, which must be reduced first, are very material intensive, because their use implies the production of large quantities or volumes of materials and energy. Also resources that speed the pace of resource usage should be reduced. This means not only prevention of waste and emissions, or reduction of pollution and toxicity, but It means use quality of resources with a sustainable way in mind as well. It involves the sustainable aspects of resource use cycles.
- The sustainable enterprise will base its production on those that are naturally available, locally, on and near the site where the enterprise has been built.

### **3.5 Conclusion and results of the chapter**

This chapter provides the following summary based upon the results from the previous review of SMEs and sustainable urban and regional development.

Sustainable development means: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The economic approach of sustainable development considers that natural resources are an important capital asset. Therefore, these resources should be used in an ideal way. The biophysical approach of sustainable development concentrates on the equilibrium of the eco-system and conservation of bio-diversity. The socio-cultural approach of sustainable development affirms the notion of slowing immigration from the rural areas to urban areas, as well as the stabilization of the population growth rate in order to achieve equilibrium between people (i.e., the population of an area) and available resources. The technological approach to sustainable development focuses on maximizing the use of people's abilities while minimizing the use of natural resources while emphasizing the need to use clean, renewable energy sources.

There is a close relationship between the presence of sustainable SMEs and sustainable urban and regional development. The sustainability of SMEs leads to the achievement of sustainable development largely within the region. There is no doubt that many activities, whether social, economical or environmental in nature, contribute to the achievement of sustainable development within the region. However, the large number of SMEs, either in terms of the actual number of enterprises or the number of employees, maximizes their role within this scope and context. Moreover, problems that may affect SMEs, whether social, economical or environmental in nature, do not only have an impact upon the sustainability of the enterprises themselves, but also influence sustainable regional development. The following is a clarification of the relationships between the sustainable SMEs and sustainable urban and regional development. Sustainable SMEs are founded on three dimensions as follows:



### **1- Economic dimension of SMEs**

The most important economic pillars on which SMEs are founded are: suitable levels of available capital, whether fixed assets or cash flow, to implement the production cycle; use of sufficiently high quality raw materials; production of sufficiently high quality levels of competitive products; successful marketing of products produced resulting in the attainment of a high level of value added at the enterprise level. The economic success and sustainability of enterprises depends on the existence, the continuity and efficiency of these pillars; this sustainability then helps to achieve sustainable regional development. SMEs create job opportunities, either directly or indirectly, for large numbers of employees in the region; and in so doing, SMEs provide good incomes for their employees. Such income earnings help to decrease the unemployment rate and, to overcome poverty within the region. Reducing poverty is one of the main aims of sustainable regional development. The empirical part of this research will verify the influence of these previous economic factors on the sustainability of SMEs and the reflection of their sustainability relative to the field of sustainable regional development.

### **2- The social dimension of SMEs**

The most important social pillars on which SMEs are founded include: 1- Providing job safety and worker effectiveness (i.e., avoidance of health hazards, bodily harm or injury) for all employees within the enterprise; 2- Providing the incentive of and security from social insurance for all employees thereby creating a working environment conducive for worker innovation and quality production; 3- Increasing the efficiency of employees by establishing training centres; and 4- Providing suitable wages to ensure quality of life for all employees .

These pillars will closely bind (i.e., generate trust and loyalty) the employees with their enterprises and help to achieve stabilization for both employees and enterprises; this, in turn, will lead to the achievement of sustainability for the enterprises themselves. Furthermore, this will help to redistribute the income and wealth resulting from the widespread distribution of these enterprises within the entire region, as well as to develop the human resources in the region. As a result, adequate shelter will be available to a very large sector of the population in the region. Employees will gain additional qualifications and become more aware of the environmental issues regarding the energy and raw materials conservation and use by attending training courses offered by local training centres. This means that sustainable SMEs will lead to the achievement of some important goals relating to sustainable regional development. The practical part of this research will investigate the impact of the previously discussed social factors on the sustainability of SMEs, themselves, as well as reflect on the impact these factors have in the field of sustainable regional development, in general.

### **3- The environmental dimension of SMEs**

The most essential environmental pillars on which SMEs are founded include: dependence on renewable raw materials; reduction of solid and liquid wastes from production processes; recycling of solid and liquid wastes; re-use of resources; conservation of energy levels used; decrease of air pollution levels; decrease of noise levels both within the actual enterprise, as well as exterior to the enterprise; and the use and periodic maintenance of new machinery and equipment.

There is no doubt that the success and sustainability of enterprises relative to environmental concerns depends on the existence, the continuity and the efficiency of these pillars. The sustainability of SMEs helps to achieve sustainable regional development. Assurances by SMEs to renew raw materials and recycle wastes will help to protect and conserve the natural resources and, of course, ensure that resources are available for future generations. Furthermore, by limiting emissions and air pollution

resulting from production processes of SMEs leads to the protection of the environment and is generally considered one of the most important goals of sustainable development. The practical part of this research will discuss the effects of the previously mentioned environmental factors on the sustainability of SMEs, themselves, and the reflection of this notion relative to the field of sustainable regional development, in general.

In general, the accrual of economical, social and environmental dimensions at the enterprise level will produce sustainable SMEs that are economically successful, socially stabilized and generate minimal environmental impacts. Sustainable SMEs help to achieve sustainable development in the region by creating job opportunities and decreasing the unemployment rate, thus, helping to overcome poverty in the region. SMEs help to increase the living standard of a very large segment of the population in the region, therefore, helping to decrease the pressures on the urban areas in the region and assisting in stabilizing the conditions of population throughout the entire country. The care taken by SMEs to use renewable materials, decrease the amount of energy used and to recycle their wastes will aid in the protection of resources and energy in the region while taking into account the rights of future generations to be able to access these resources, as well.

Since Rio 1992, Egypt has been engaged in a sustainable development process. This attention has resulted in the identification of environmental problems specific to each region, the analysis of relative causes and effects, and proposals of preventive and curative solutions. This led to the first phase of elaboration of the Official Report on the Environment of Egypt adopted by the government in 1992. The official report is included in the environmental charter of Egypt. It is a document of reference and orientation for any actions or future development plans. Law No. 4/1994 is considered to be one of the primary Egyptian contributions to protect the environment. All of the new enterprises, as well as the extension of the current ones, should comply with this law.

The gap between existing environmental legislation and the implementation of this legislation remains noticeably large in reality. In addition, the means used to protect the environment were inefficient and as a result, in 2005 the Environment Sustainability Indicator (ESI) ranked Egypt in the 115th position among 146 nations rated. This position reflects that the environment in Egypt is still suffering from many fundamental problems. If Egypt wants to achieve sustainable development goals rapidly, it must move from: (i) a focus on inputs (projects, laws) to output-oriented outcomes (impacts of projects and legal changes); (ii) a top-down approach and centralized decision making into a system of information sharing and improved governance; and finally, (iii) a process of measuring performance to track actions and accommodating learning.

The Egyptian experience is insufficient in terms of the creation of legislation for SMEs. Generally, SMEs comply with general laws, environmental laws, taxation requirements, and social insurance laws applicable to larger manufacturing enterprises. These laws do not differentiate between enterprises according to size. This is seen as a big obstacle toward the sustainability for these smaller enterprises. The attempt of the social fund to classify SMEs regarding their environmental effects is considered very useful in this field. Thus, it has reclassified SMEs into three groups according to their environmental effects and established the necessary regulations needed by each to ensure the protection of the environment. The application of these regulations will be tested in the case study.

A single SME may have a very small impact on the environment, but a great number of these enterprises concentrated in one area significantly influence the environment in a negative way. The

EEAA only views the environmental activities for each enterprise individually without taking into consideration, or calculating, the influence of other similar enterprises located in the same geographic area or, for that matter even in the same building. This is the action in which the EEAA fell short when it classified these enterprises according to their level of environmental influences. The role played by the EEAA in the field of environmental protection should become more efficient. The EEAA should not only be concerned with observing, controlling, fining or otherwise penalizing these SMEs but should also give these enterprises financial and technical-support to aid them in the alleviation of their environmental shortcomings. This will build trust between the EEAA and the SMEs, as well as strengthen the cooperation between the entrepreneurs and the administrative cabinet of the state.

The idea of a sustainable enterprise means, from my point of view, that an enterprise is able to achieve the socio-economic objectives for the enterprise and its employees without harming the eco-system. An enterprise which achieves success in the field of eco-efficiency without achieving progress relative to the economic and social concerns of the enterprise, itself, or for its employees is considered a non-sustainable enterprise. The sustainable enterprise should be achieving physical success within all three dimensions – economically, socially and environmentally - to an equal extent. Sustainable enterprises should respect and conserve the eco-system; such an enterprise must pay attention to provision of research, promotion and implementation of sustainable development in terms of concept, processes and services. The sustainable enterprise should also use renewable resources, as well as forms of renewable and clean energy; it must maximize the use of human abilities and potential while minimising the use of natural resources.

A sustainable SME should be devoted to the fulfilment of elementary needs by using means with the least possible environmental impact and the highest possible economic and social yield. If local resources are not sufficient, then an input is required from another enterprise in an eco-system or in material cultural conditions that are more appropriate to provide the resource sustainability. On a larger scale, eco-communities, eco-regions or eco-zones would be able to exchange resources, products and services, thus creating a direct link between the prevailing eco-systems within particular areas and the types of processes, products, systems and services involved. Thus, sustainable SMEs would be part of a sustainable regional development which works actively and cooperatively to achieve an economic basis that is not just environmentally friendly but which also provides the region with the resources necessary to achieve social and environmental sustainability on a dependable, long-term basis.

## Chapter 4: SMEs effects on regional development of a region

### 4.1 Introduction

This chapter aims at testing the first hypothesis which states that **“SMEs have, in general, a positive effect on the economic and social development of a region because they begin to activate the regional and national chains of economic added value, and they create job opportunities with suitable regional income levels.”** To examine this hypothesis, we will study groups of variables, some of which are concerned with the ability of SMEs to drive the regional and national chains of economic added value. The second group of variables measure the ability of SMEs to create job opportunities at the national (Egypt), regional (Ismailia) and local (study area) levels. The third group of variables measure the effects of SMEs on the way of life and living standards of employees and their families including educational levels, employment and marital status of employees and their families. This chapter will also discuss housing issues pertaining to the employees and their families. Furthermore, the suitability of employees’ income levels will be tested to determine whether or not a good living is provided. This will be done by comparing the averages of these factors for employees in the case study with the overall relative averages at the regional (Ismailia) and national (Egypt) levels.

It is necessary to indicate that the most important constraint that faces the development of SMEs in Egypt is the absence of correct and sufficient data about the contribution of this sector in the development process, in general, and the relative effect this has on the ability of SMEs to activate the regional and national chains of economic added value, as well as the possibilities for SMEs to guarantee a good living standard for employees, in particular. It is also important to indicate that the majority of previous scientific research and studies related to SMEs in Egypt only discussed this sector from an individual perspective (Hefnawy 1998). In this chapter we will attempt to provide a complete and clear image of SMEs and the effects this sector has on regional development, within the Ismailia Governorate, as a case study in Egypt.

### 4.2 SMEs and chains of added value

#### 4.2.1 Definitions of added value

In the literatures review there are many definitions of "added value ", some of them define the added value as: the difference between the firm’s profit and cost of all capital employed, i.e. the weighted average cost of debt and equity (Salmi and Virtanen, 2005), others deal with added value not only as a final result for the project’s profit compared with the cost of capital, but also as the value attributed to products and services as the result of a particular process (e.g. production process, storage, transport) (Eyefortransport team)<sup>28</sup>. As developed by General Accounting Office ((GAO), 2005)<sup>29</sup>, value-added means: Those activities or steps that add to or change a product or service as it goes through a process; these are the activities or steps that customers view as important and necessary.

There are other definitions which are interested in how to measure the value-added, such definition describes added value as a measure of output. An added value by an organization or industry is, in principle revenue – non-labour costs of inputs where revenue can be imagined to be price quantity and costs are usually described by capital (structures, equipment, land), materials, energy, and purchased services. Treatment of taxes and subsidies can be nontrivial. These definitions show that the added value is not one phase in the production cycle, but it is a sequential chain of phases, which related to

<sup>28</sup> <http://www.eyefortransport.com/glossary/ab.shtml>, 19.01.2005

<sup>29</sup> General Accounting Office, Washington, United States, <http://www.balancedscorecard.org/basics/definitions.html>, 19.01.2005

produce a particular product or service, starting with getting the raw-materials and ending with the final product. This is cleared in the definition of Agricultural & Food Council for value-added, which says: VALUE CHAIN is the sequential set of primary and support activities that an enterprise performs to turn inputs into value-added outputs for its external customers (VentureLine VL, teem<sup>30</sup> 2005).

As developed by Michael E. Porter, it is a connected series of organizations, resources, and knowledge streams involved in the creation and delivery of value to end customers. Value systems integrate supply chain activities, from determination of customer needs through product/service development, production/operations and distribution, including (as appropriate) first-, second-, and third-tier suppliers. The objective of value systems is to position organizations in the supply chain to achieve the highest levels of customer satisfaction and value while effectively exploiting the competencies of all organizations in the supply chain (VentureLine VL, teem<sup>31</sup> 2005).

The previous definitions of added value and added value chain show that, we do not speak about the final profit of the project compared with the cost of invested capital, but we also speak about a group of relating activities and processes. These activities and processes start with obtaining, transporting and storing the raw materials; then process of production to get final products or services which are delivered finally to customer. We denominate it in this context as production cycle. In this context we do not talk about the difference between the firm's profit and cost of all capital employed only, but we will talk about the negative and positive impacts, which return to local community, environment and the enterprise itself as a result of these activities and processes also.

This topic aims to study the variables which contribute to activate the chains of added value in the case study. In this context we will try to answer the following question “are SMEs in the study area successful in activating the chains of added value positively or not?” This question is answered by following the production circulation in the study area. The production circulation starts at first with getting the raw-materials, second transportation facilities of raw-materials, third storing of raw-materials, fourth manufacturingization process to produce a final product, which has a added value , fifth the solid and liquid wastes and how to deal with them, besides the marketing pattern of final product. Moreover, we declare, in this topic, the relation between the employees and the owner and if they have relationship of relatives to the owner or they are only from the local society or they are coming from outside the local society to only work. This reflects size of the activity which SMEs produce it in the region and gives us a clear vision about the effects of SMEs to activate the chain of value-added in the region. The following is more details about the results of the analysis for these related indicators.

#### **4.2.2 The added value at the enterprise level**

The added value helps to recognize the success of enterprises in achieving net profits compared with the invested capital. This is more practical than the traditional measure, i.e. the cost and returns, since the added value measure gives the real profits of the enterprises, in addition that the traditional measure gives the impression that the project, on the face, makes profits, while using the added value enables us to judge accurately if the project makes a profit or incurs losses (Lamm- Tennant, and Olsen 2000).

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<sup>30</sup>VentureLine VL, teem, ([http://www.ventureline.com/glossary\\_V.asp](http://www.ventureline.com/glossary_V.asp)), 18.06.2003.

<sup>31</sup>VentureLine VL, teem, ([http://www.ventureline.com/glossary\\_V.asp](http://www.ventureline.com/glossary_V.asp)), 18.06.2003.

There are many traditional ways by which one can analyze the enterprises' performance like Earnings per Share EPS, Price Earning Ratio P/E ratio, Price Cash Flow PCF. But Earnings per Share can be manipulated by accounting practices and doesn't provide clear understanding of the variables that drive value, such as operating margins, cost of capital, and the competitive advantage period. Economic Value Added EVA recognized that it takes capital to produce profits, assessing a capital charge to the net operating profits earned by a company. The magnitude of this charge depends on the amount of capital invested to generate the profits and the cost of that capital as measured by Weighted Average Cost of Capital WACC.

EVA must be used with care in valuing and identifying stocks that have the potential to outperform the market, but the approach gives analysts valuable insights into value creation. EVA is a reasonable valuation tool for the shares of companies whose prospects can be forecast with reasonable accuracy. It appears to be useful in spotting changes in a company's ongoing performance that are hidden in EPS numbers. Such inconsistencies between economic and earnings performance are no doubt more relevant for companies whose fortunes trace and predictable trajectories than those whose fortunes are subject to uncertain and not easily predictable swings and discontinuities<sup>32</sup>.

"EVA in its simplest form provides a more accurate measure of profitability than "plain net income" because it measures how well a company has performed in relation to the amount of capital employed. EVA is the performance that most directly links financial performance with the creation of shareholder wealth over time. Another way to look at EVA is if a business returns more value than it has consumed, it has created value (VERY GOOD). If it returns less value it has destroyed wealth (VERY BAD)"<sup>33</sup>.

Unfortunately, many agency owners are destroying shareholder value because profits are less than their full cost of capital. EVA corrects this oversight by including all capital costs, debt and equity, to determine whether the agency has created or destroyed shareholder value during a reporting period (calculated either quarterly or annually).

Expressed as an equation, EVA equals the following:

$$\text{EVA} = \text{Net operating profit after Tax} - (\text{Cost of Capital} * \text{Total Invested Capital})$$

Net operating profit after tax is generally calculated as net operating income after depreciation, adjusted for such items such as additions for interest expense (after tax) and goodwill/intangible amortization and is generally easy to calculate. The cost of capital is the weighted average of two components:

1. The cost your agency would have to pay for long and short-term debt.
2. The cost of equity.

To reach the net profit of a small project, this research adopted the system implemented in the Egyptian tax law which defines the net profit of an enterprise as:

The net profit = end product price - employees wages cost of raw materials used - 3000 pounds as family allowances / a year - depreciation of capital ( 20% \* capital ) - enterprise rent (square meter \* 5 pounds / per square meter ) - depreciation of raw materials ( 10%\* cost of the raw materials ) - cost

<sup>32</sup> <http://www.indiainfoline.com/bisc/evaf.html>, 17.08.2005

<sup>33</sup> <http://www.wfgfi.com/MAY2004.pdf>, 17.10.2004

of transport of the raw materials – operating costs of the enterprise ( electricity, water, gas, telephone) funds allocated for insurance ( 10%\* total value of the registered employees ) - expenses of savings ( 20% \* total employees salaries ) - potential risks on the enterprise ( 5% of the net profits of the enterprise ) - administration cost ( 25% \* the net profit of the enterprise ) - taxes levied according to the profit of the enterprise( 20 to 40% of the net profits ).

Regarding the results of the field survey in terms of the added value at the enterprise level, the use of this equation to determine the net profit in a year disclosed four kinds of groups in the study area:

The first group made a relatively low profit, less than 6000 pounds / a year made by 20 enterprises (19.8% of the total number of the SMEs. Food and agricultural industries came at the top, while the metal industries came at the tail of this group.

The second group made a profit between 6000 and 16000 pounds / a year. The number of enterprises in this group reached to 42 (41.6% of the total SMEs in the case study). On the top of this group came the wood industry while the food and agricultural industries came at the tail of the list.

The third group made a profit reached between 16000 and 31000 pounds / a year. The number of enterprises in this group reached 31 enterprises (30.7% of the total SMEs in the case study). The metal industries were at the top of the list of this group, while the wood sector came this time at the tail of the list.

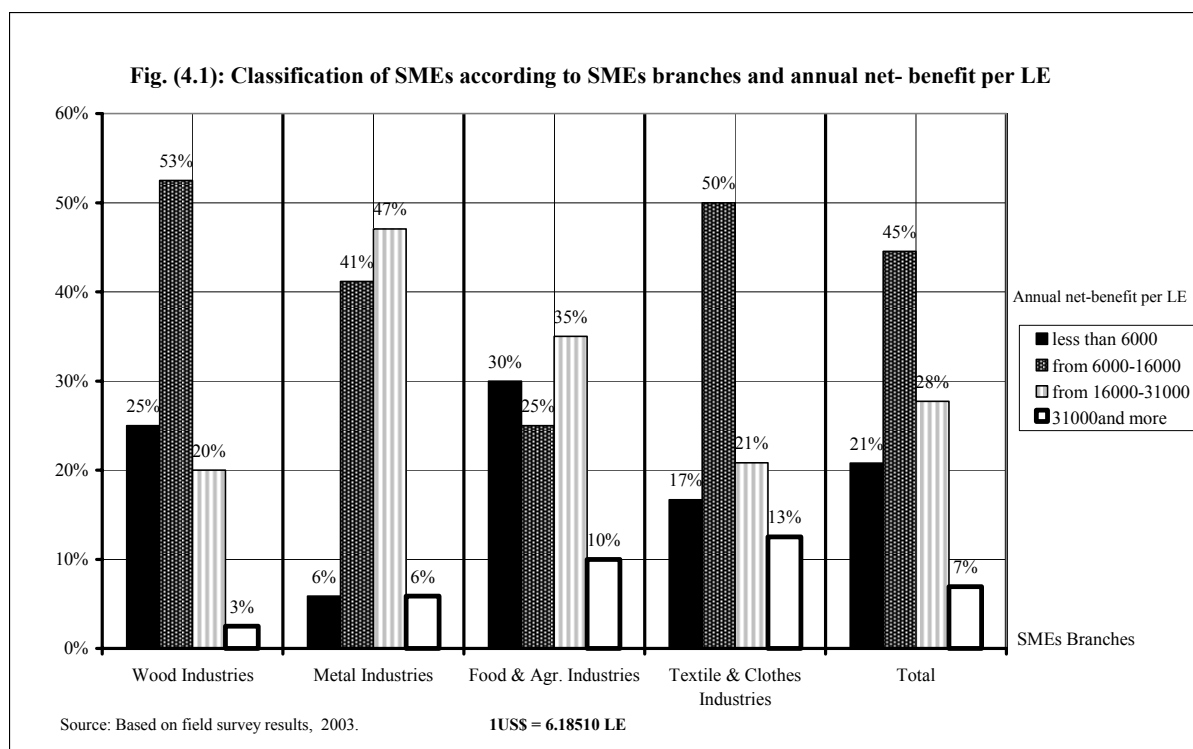
The fourth group was the least in terms of the number of enterprises, 8 enterprises or 7,9% of the total SMEs. This group made an annual profit higher than or equal to 31000 pounds. The textile and clothes industries were at the top of this group, while at the tail of the list this time also was the wood sector. Table (4.1) and Fig (4.1) classify the SMEs according to their specific annual profits.

**Table (4.1): Classification of SMEs according to annual net- profit in EGP**

SMEs branches	The average of annual net profits of SMEs in EGP (1\$ = 6.18510 LE, 2003)								Total
	Less than 6000		From 6000-16000		From 16000-31000		31000and more		
	No.	%	No.	%	No.	%	No.	%	
<b>Wood Industries</b>	9	22.5	20	50.0	9	22.5	2	5.0	40
<b>Metal Industries</b>	1	5.9	7	41.2	8	47.1	1	5.9	17
<b>Food &amp; Agr. Industries</b>	6	30.0	4	20.0	8	40.0	2	10.0	20
<b>Textile &amp; Clothes Industries</b>	4	16.7	11	45.8	6	25.0	3	12.5	24
<b>Total</b>	20	19.8	42	41.6	31	30.7	8	7.9	101

Source: Based on the field survey results of Ismailia, 2003.

It is worth noting that all the SMEs in the study area without exception realized profits, even though they differ in the rate of profits made, with the lowest group making profits of 496.2 pounds a year while the annual profits of the highest group reached 44878.7 pounds. The SMEs may make profits ostensibly on the face, but how much is the volume of these profits in comparison with the invested capital in this enterprise. To make sure of this, the value of the profits made was compared to the invested capital. The added value was also analyzed by using the following equation:



The added value = value of the annual profit of the enterprise - value of the annual invested capital (estimated according to the highest profit given by a bank for an invested capital, mainly 10 % the capital of the enterprise). Table (4.2) and Fig (4.2) show the outcomes of this analysis.

**Table (4.2): SMEs classification according to the percentage of the net- profits for the invested capital**

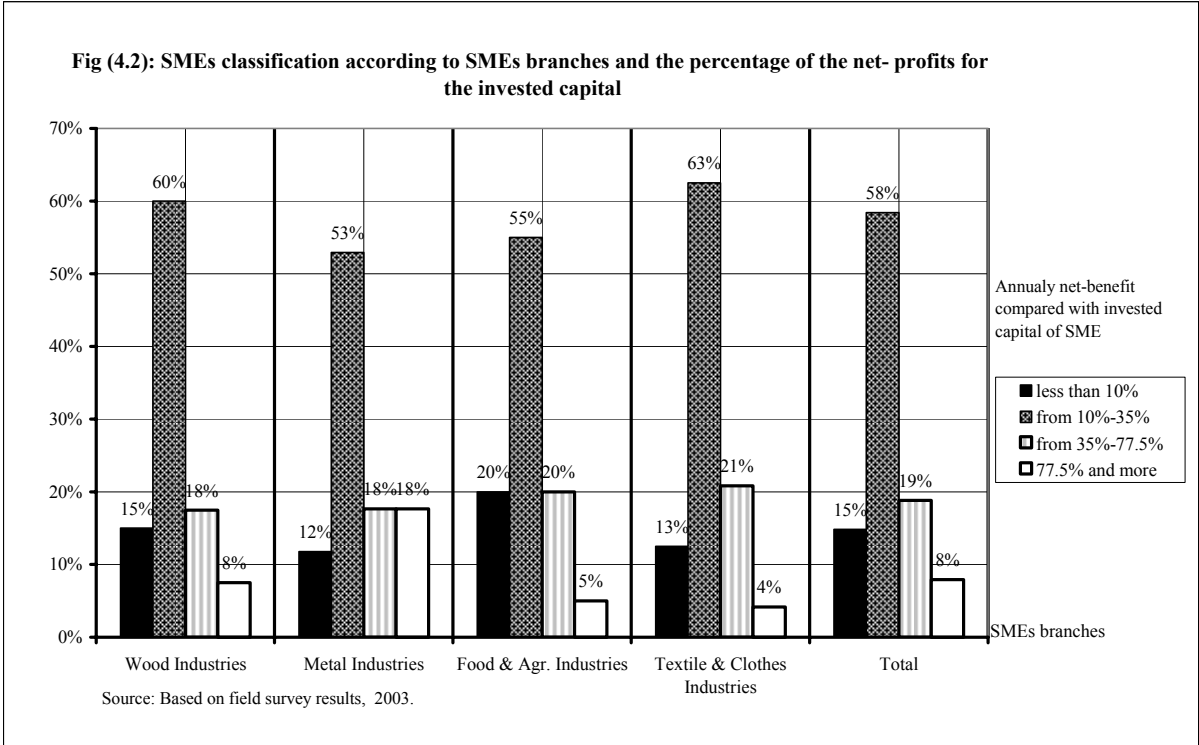
SMEs branches	Percentage of the net- profits for the invested capital								Total
	Less than 10%		From 10%-35%		From 35%-77.5%		77.5% and more		
	No.	%	No.	%	No.	%	No.	%	
<b>Wood Industries</b>	6	15	24	60	7	18	3	8	40
<b>Metal Industries</b>	2	12	9	53	3	18	3	18	17
<b>Food &amp; Agr. Industries</b>	4	20	11	55	4	20	1	5	20
<b>Textile &amp; Clothes Industries</b>	3	13	15	63	5	21	1	4	24
<b>Total</b>	15	15	59	58	19	19	8	8	101

Source: Based on the field survey results of Ismailia, 2003.

The results show that 15% of the total SMEs achieved net benefit less than 10 % of the invested capital, while 58% of the total SMEs in the study area, made net benefit between 10% and 35% of the invested capital, whereas 19 % of SMEs have brought in net benefit ranging between 35 and 77,5% . However, 8% of SMEs in the study area achieved net benefit higher than or equal to 77,5%. It is noteworthy that the least net benefit of an enterprise was 5% from the invested capital in this enterprise, while the highest net benefit of an enterprise reached to 149% from the invested capital in this enterprise.



Regarding the analyses of the added value of these enterprises, it conenterprises that only 14 enterprises achieved added value less than zero. It means that even if these enterprises achieved profits by the end of the year, they actually incurred a loss compared to the annual returns of the invested capital if deposited in a bank. Wood industry came at the top of the enterprises which achieved added value less than zero, while the textile and clothes enterprises came at the tail of this list.



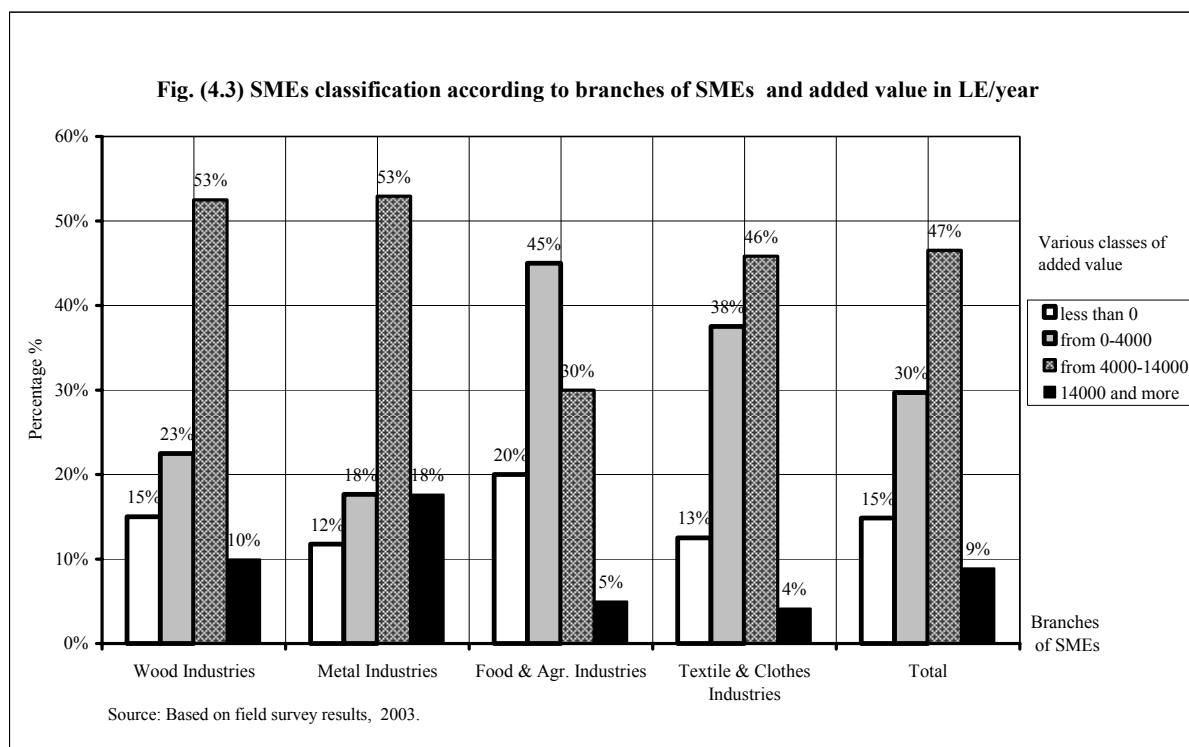
On the other hand, the proportion of enterprises which achieved added value less than 4000 pounds was 25,7% of SMEs in the case study. The food and agricultural sector were at the top of this group . As for the enterprises which achieved added value ranging between 4000 and 14000 pounds, they made up 49,5% of all SMEs in the case study. The wood enterprises came on top of this group. As for the enterprises which brought in added value of 14000 pounds and more, they made up 10.9% of SMEs in the study area. The metal industries came at the top of this group. It is noteworthy here that the least added value reached minus 4563 pounds, while the highest added value achieved by an enterprise in the study area hit 35333 pounds. As shown in Table and Fig (4.3). Here there is a great difference between the highest added value and the lowest one, which shows the great disparity among the enterprises in terms of the degree of organization and management, as well as the degree of experience and follow-up of the situations on the markets.

Although the analysis of the added value for the SMEs in the study area show clearly the success of these enterprises in this field, about 14% of the enterprises incurred failure in that field, and some enterprises which made a relatively big net profit ( about 31000 pounds ) also incurred minus added value, which illustrates the lack of know how of those running these enterprises and the existence of grave mistakes in administration and in the production process in general. Though the SMEs in the study area have made added value in general in terms of the project itself, the question now is: Did these enterprises achieve added value at the regional level in general and at the local level in particular? Did these SMEs succeed also, at the level of the production process and its relevant areas, to achieve added value or not? This is what the following lines will illustrate.

**Table (4.3) SMEs classification according to SMEs branches and added value in LE**

SMEs branches	The achieved added value per LE/Year								Total
	less than 0		from 0-4000		from 4000-14000		14000 and more		
	No.	%	No.	%	No.	%	No.	%	
<b>Wood Industries</b>	7	17.5	7	17.5	22	55.0	4	10.0	40
<b>Metal Industries</b>	2	11.8	3	17.6	8	47.1	4	23.5	17
<b>Food &amp; Agr. Industries</b>	3	15.0	8	40.0	8	40.0	1	5.0	20
<b>Textile &amp; Clothes Industries</b>	2	8.3	8	33.3	12	50.0	2	8.3	24
<b>Total</b>	14	13.9	26	25.7	50	49.5	11	10.9	101

Source: Based on the field survey results of Ismailia, 2003.



#### 4.2.3 Relationship analysis between the employees and the owners

The relation between owner and employees, or in another meaning, the origin of employees in SMEs is considered one of the most important indicators relating to the extent success of SMEs to activate the value added chain in the region. The employees in SMEs use in general transport facilities to going to their work. This means that, SMEs help to activate the transportation sector in the region. The bigger the number of employees of SMEs coming from outside of the local community, the greater is the activation of SMEs on the transportation sector.

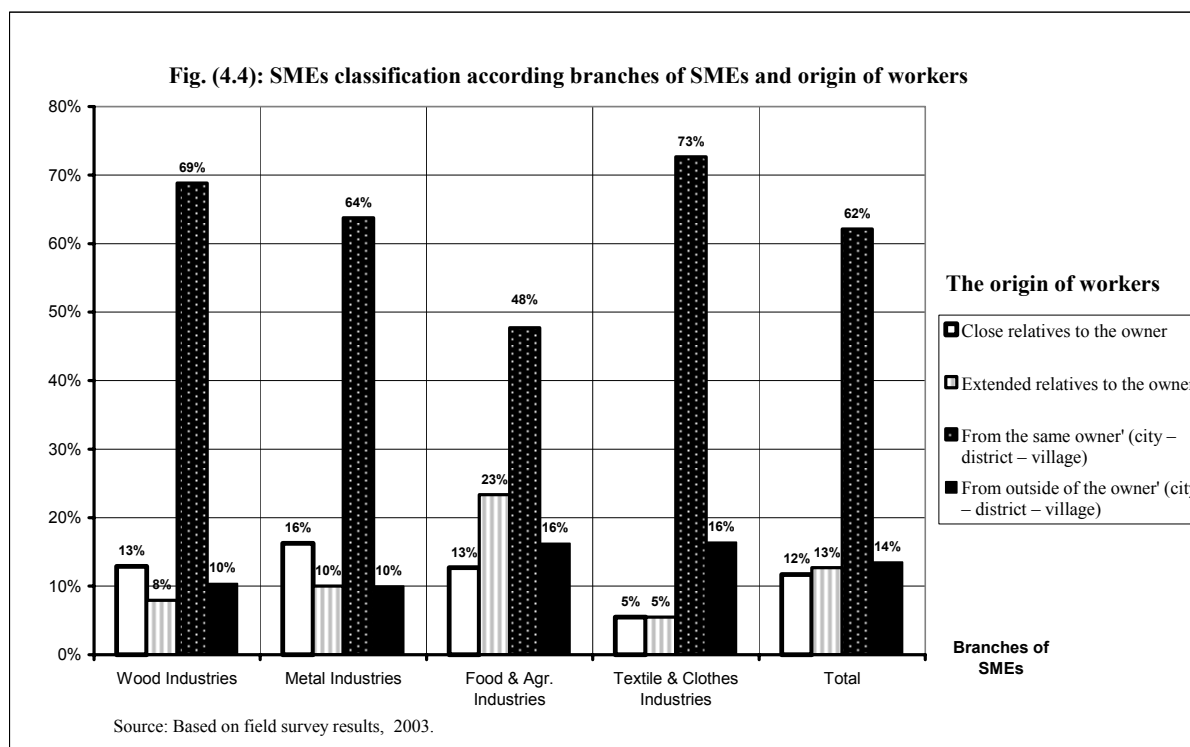
The field study shows that about 25% of employees have relationship of relative with the owner. About 62% of employees are inhabitants in the local community and they have no consanguinity relationship with the owner. 14% from employees are from outside of the local community and they are used to go to SMEs in the study area only to work. The largest percentage of employees who are relatives of the owners is found in the sector of agricultural and food industries. The largest percentage

of employees coming from the local community (without being relatives), is found in the sector of textile and clothes industries. Also, the sector of textile and clothes industries, beside the sector of agricultural and food industries had the largest percentage of employees coming from outside the local community. See Table and Fig (4.4), which shows the classification of SMEs according to the relations between the employees and owners.

**Table (4.4): SMEs classification according the relationship between employees and owners**

SMEs branches	The origin of employees								Total
	Close relatives to the owner		Extended relatives to the owner		From the same owner' (city – district – village)		From outside of the owner' (city – district – village)		
	No.	%	No.	%	No.	%	No.	%	
Wood Industries	26	13	16	8	139	69	21	10	202
Metal Industries	13	16	8	10	51	64	8	10	80
Food & Agr. Industries	25	13	46	23	94	48	32	16	197
Textile & Clothes Industries	7	5	7	5	93	73	21	16	128
<b>Total</b>	<b>71</b>	<b>12</b>	<b>77</b>	<b>13</b>	<b>377</b>	<b>62</b>	<b>82</b>	<b>14</b>	<b>607</b>

Source: Based on the field survey results of Ismailia, 2003.



From the previous Table and the previous Fig, we conclude that the SMEs in the study area do not depend in principle on family work, but they extremely transcend it and became more regular to serve most people of the local society. The SMEs in the study area also succeed to attract employees from outside this the community.

From my point of view, it considers a very good indicator for the possibility of these industries to achieve the development. The high percentage of employees (75%), who work in the study area without any relative relation with the owners, reflects the fact that SMEs in the study area are not fragile activities, but they are forceful. As well as, about 14% of employees are coming daily to work in the case studies from outside the local community and they use the deferent transportation facilities to go and return from their work. This helps to support the hypothesis which states that “SMEs have the ability to activate the chains of added value in the region”.

#### **4.2.4 Analysis of the indicator: Categories of used raw-materials**

The raw materials which are used by SMEs can be classified in general as:

- Renewable local and natural raw-materials,
- Renewable natural raw-materials from the national market,
- Fabricated local materials,
- Fabricated materials from national market and
- Imported raw-materials from abroad.

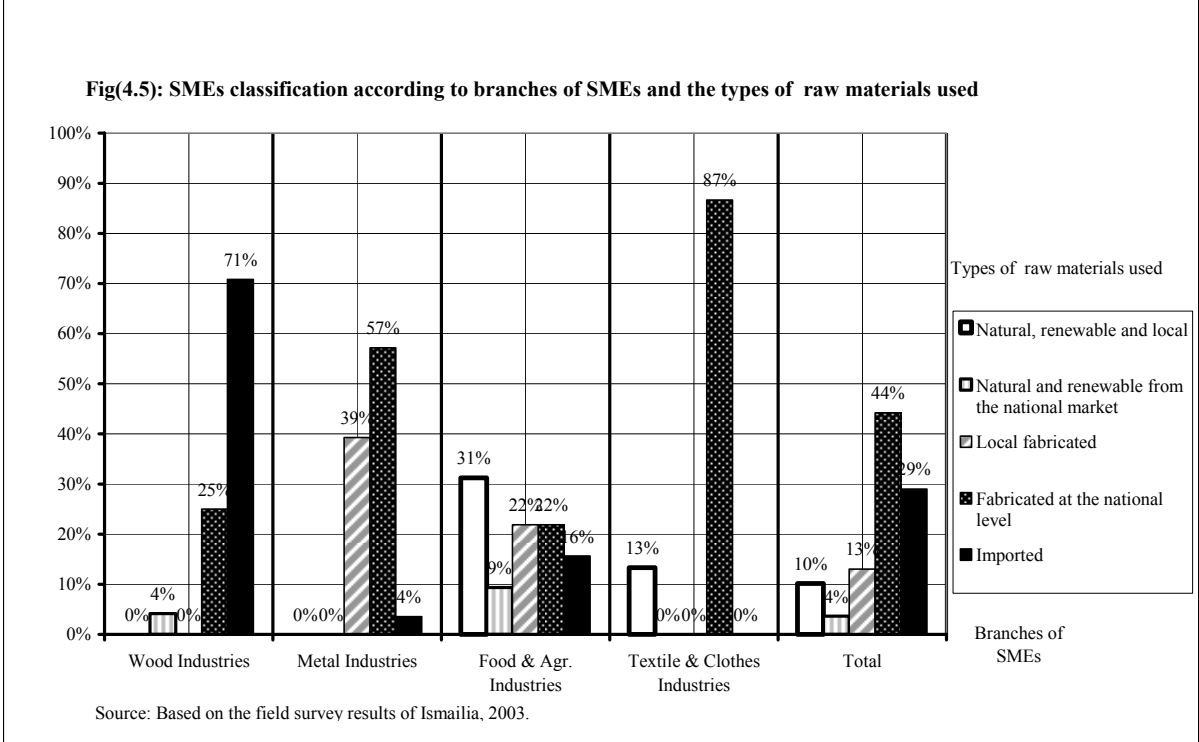
The SMEs in the study area collect raw materials of these categories with different percentages. The contribution of local market to cover the needs of SMEs from the raw-materials, either the renewable or the fabricated, is only 23%. The contribution of national market, to provide SMEs with their needs for raw-material, increases to 48%. It is important to notice the relative high percentage of imported raw-materials, which reaches 29%. On the other side, the use of renewable raw-materials generally, either existing on the local market or coming from the national market, is very low. Its percentage reaches only 14%.

It is also important to indicate that the contribution percentage of global and national markets to provide the SMEs with their needs from the raw-materials, compared with the local market, is very high (77%). This means that many activities, such as import, commerce and trade, transportation and also storage, are activated to bring the necessary materials for SMEs in the case study. And this although extremely proves the hypothesis which states that “SMEs in the study zone help to activate the chains of added value in the region”.

But from the research point of view, the dependence of SMEs on non-local raw materials opposes greatly the concept of sustainable development, which basically focuses on the use of renewable local raw-materials to produce the necessary goods and services for the society. This could reduce the transport distance and would cut down the loads of the environment resulting from the transport of raw-materials from abroad or from the national market. Also, it would be more keeping for resources and protecting the rights of next generation in these resources especially when local alternatives existed and could be used. It is also important to pay attention that the recycling of solid wastes, which resulted from industrialization process, and to use them again as raw-materials, would greatly contribute to achieving the core objective of sustainable development. This will be analysed later.

It is important to point out that the sector of agricultural and food industries has the highest percentage of renewable raw-materials, whether they are local or coming from the national market. As well as, the sector of metal industries has the highest percentage of fabricated materials, which come from non-renewable natural resources whether they are local or from the national market. While, in the field of imported raw-materials from abroad, the sector of wood industries comes in the first rank. More than 70% of the enterprises of wood industries use only imported raw materials, because until now there is no strong national competitor.

Fig (4.5) clears the classification of SMEs in the study area according to the pattern of used raw materials. It is noteworthy that all the woods produced at the national level are either grained wood made from the molasses of the sugar cane or from the stalks of cotton, and is of a less quality; in addition that the quantity produced annually does not meet the needs of the enterprises of the wood industry. This will be discussed later.



**4.2.5 Transport facilities used in transporting raw materials**

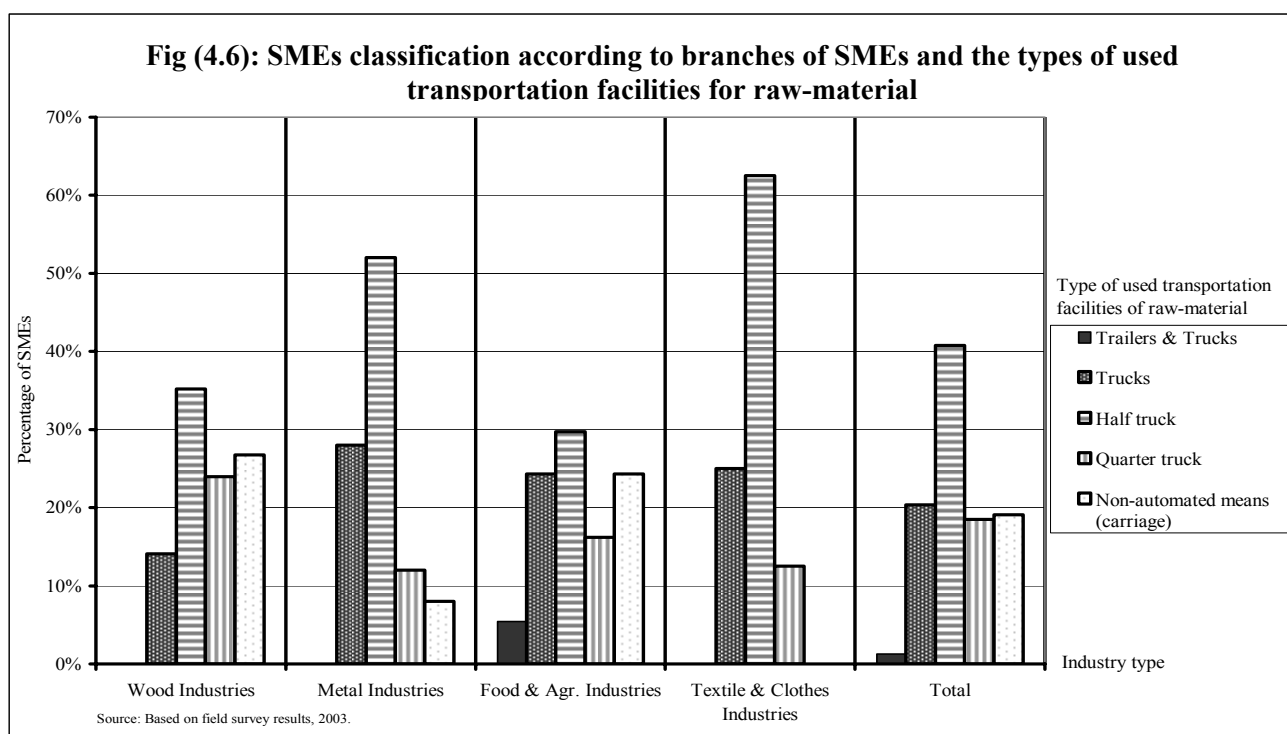
The field survey shows only 2 % of the SMEs in the study area are using heavy transportation facilities like trailers for transporting their raw materials. All of the enterprises which are using this type of facility are in the sector of food and agricultural industries. This is normal because the raw materials used in these industries are relatively big in volume. About 20 % of the enterprises are using medium transportation facilities, such as trucks and half trucks in transporting their raw materials. The metal industries mostly industries use these facilities. The biggest part of the enterprises (60%) in the case study is using light transportation facilities like pick-ups to transport their need from the raw materials. Textile and clothes industries come at the top of the SMEs using these facilities. As for the enterprises which use the non-automated means of transportation, they are estimated at 18 % of the total number of enterprises. The wood industry is coming on top of these enterprises. Table (4.5) and Fig (4.6) show the classification of the small scale industries according to the means used for transportation of the raw materials and the end product.

Although only 2% of SMEs use heavy transportation in transporting the raw-materials, this ratio should not be neglected without understanding the reasons behind this phenomenon and its consequent present and future problems. In this context, by asking the entrepreneurs, it became clear that the national market is the main provider of raw-materials for these industries. Most of the enterprises are covering their need from the raw materials by transporting them from the national market because there are not main storages or whole sale-shops to sell these raw-materials locally. Most of the SMEs in the study area are storing their necessary raw-materials themselves.

**Table (4.5): SMEs classification according to branches of SMEs and the types of used transportation facilities for raw-material**

Branches of SMEs	Trailers & trucks		Trucks		Half truck		Quarter truck		Non-motorized - animals carriages	
	No.	%	No.	%	No.	%	No.	%	No.	%
Wood Industries	1	1	10	14	27	36	17	23	19	26
Metal Industries	0	0	8	31	13	50	3	12	2	8
Food & Agr. Industries	2	5	9	23	12	31	7	18	9	23
Textile & Clothes Industries	0	0	6	24	15	60	4	16	0	0
<b>Total</b>	<b>3</b>	<b>2</b>	<b>33</b>	<b>20</b>	<b>67</b>	<b>41</b>	<b>31</b>	<b>19</b>	<b>30</b>	<b>18</b>

Source: Based on the field survey results of Ismailia, 2003.



According to entrepreneurs, the use of transportation facilities to import raw-materials depends on the size of work-place in the SME at first, second the size of used raw-materials and third the rate of used raw-materials. If the SME has a large work-place and its raw-materials are relatively big such as wood, metals or agricultural products such as rice, flour or palm-fronds, the owners of enterprises prefer to store a large quantity of the raw-materials at once, because the volume does not play an important role in transport cost. So the entrepreneurs prefer using heavy transportation to help them in transporting their need from raw-materials only once with low cost of transportation instead of many times with high transportation cost.

When the experts in the centre of support technology of SMEs in Cairo were asked about the negative effects which face SMEs as a result of storing a large quantity of these materials in the work area of SME, they said that: most of SMEs are not qualified to store a big size of raw-materials. And they do that under poor conditions of air and sun-light. These cause losing about 25% from the storage raw-

materials in average. It makes also the active area of work very small, a matter which harms the production process in the enterprise. And as a result of that, the cost of production will increase and the ability of competition for SMEs products will be very limited in the market.

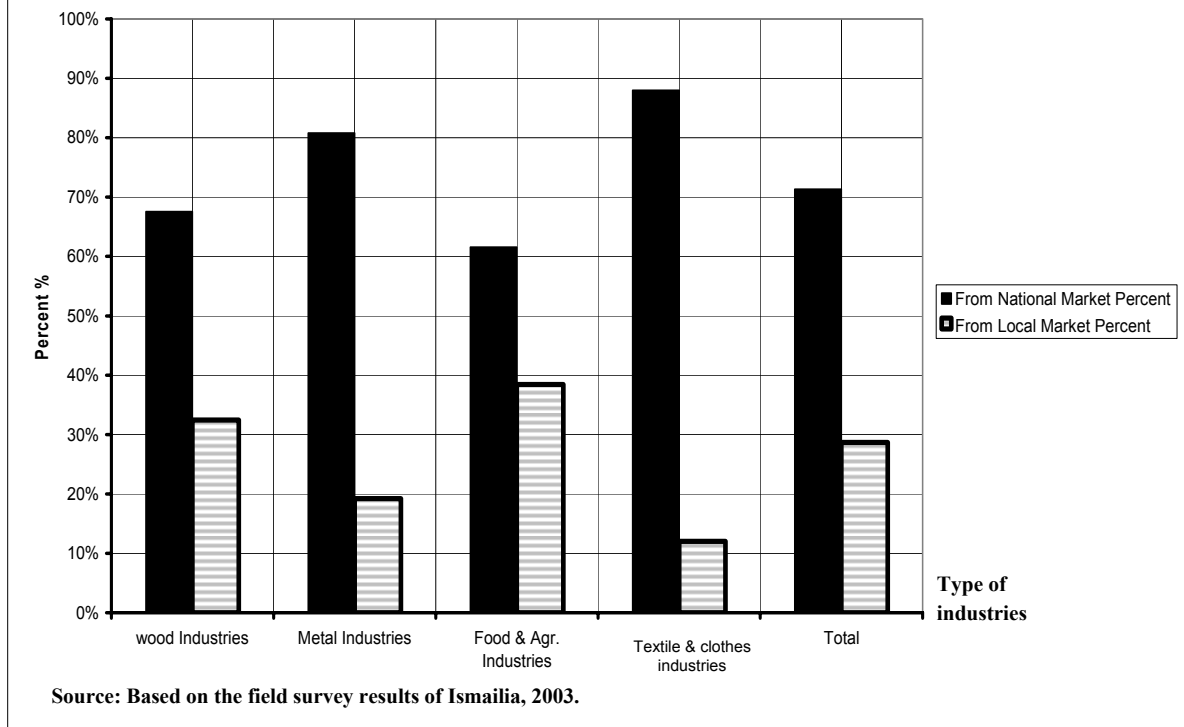
On the other hand, after asking the key persons in the local community about the negative impact of using heavy transport facilities to transport raw-materials to some enterprises in the study area, they have said that the process of loading and unloading is very disagreeable for the neighbours. It leads to traffic disturbances in the roads and streets which surround the enterprise, because the width of most of these streets is very small, about 6 - 10 m in average. Also, heavy transportation causes strong soil stress and destroys the burst infrastructure for sewage and drinking water. One-time in the beginning of the nineties, caused the passing of one heavy truck, which transported the raw-materials to one of the enterprises in the case study, burst of a pipe of drink water and a sewer in the same time. Thus, the drinking water was polluted by the sewage and that was about to lead to an environmental catastrophe in the study area.

It became clear after more detailed questions asked to the entrepreneurs that, in the study area, there are not any forms of cooperation among the enterprises, neither formal nor informal. As a result, each SME will have to provide its own needs of raw materials individually, thus incurring the costs of the raw materials in its phases to the place where they are manufactured. Most of these SMEs even afford finding a place for storing their respective raw materials either near their enterprises or far from them. In the most cases, they take a partition from their enterprises exploiting them as a storing place. This, in turn, cuts down the size of the working area and there is not enough space or freedom to implement the production process.

In general, about 71% of the SMEs in the study area use various means of transport to bring their raw materials from the national market. The textile and clothes industries came at the top of the enterprises transporting their raw materials from the national level. The food and agriculture industries came at the end of this list. Thus, the raw materials of this sector exist in the study area. Fig (4.7) illustrates the distribution of the percentages of SMEs which transport the raw materials necessary for the production process from the national market in comparison of what they transport from the local market.

It is important to clarify that, the majority of the enterprises exceed their role and play roles of other activities in the region, such as trading activities of whole-sale and retail and of storing. They take all their supplies and needs of the raw materials directly from the national market without the need to obtain them from the local market. So, the local market of the small scale industries will continue to be weak and not active enough unless there is a true desire in the future for cooperation and coordination among the same enterprises to cover their needs from the supplies of production in a collective way. It should be referred here to the negative environmental impacts which result from the use of complicated transport facilities daily in transporting the raw materials to the study area especially if these enterprises are spreading in residential areas as in the case of Ismailia Governorate.

**Fig (4.7): Distribution of SMEs according to Transport location of raw-materials and type of industries**



Sometimes the movement of transport, besides air pollution, cause traffic turbulence in addition that they cause nuisance to the local people. This problem can be addressed if these enterprises, particularly the similar ones, can be put in one place or one manufacturing zone, a way which could greatly lessen these impacts. In addition, when there is cooperation and coordination among these enterprises, the raw materials can be transported to a main storing compound by using trailers or half trucks, and later on they can use the pick ups or the non motorized means of transport for transporting raw-materials as a prelude to manufacturing them. This will no doubt limit the negative effects resulting from each enterprise using its own means individually for transporting the raw materials, thus making the manufacturing process more economical.

#### 4.2.6 Patterns of marketing the end product

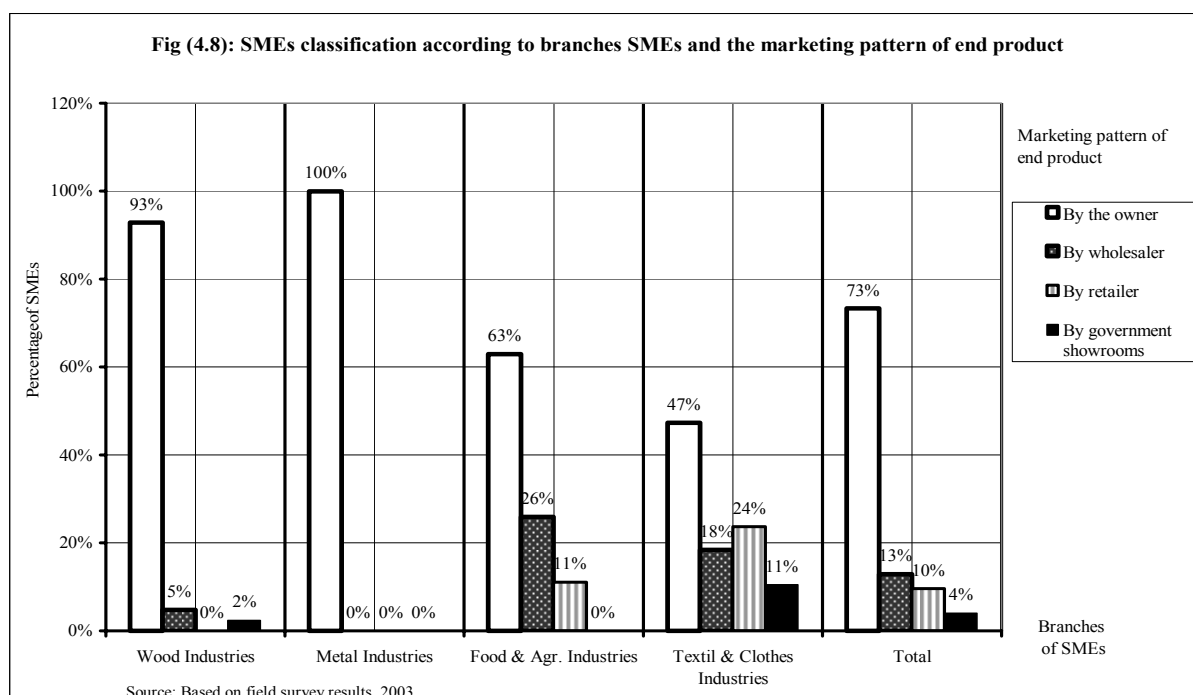
The SMEs in the study area are classified according to this factor, into industries where their final products are marketed through the owner himself, sale whole traders, retailers and government showrooms. Thus, about 73 % of the enterprises are marketing their end products through the owners themselves. The metal industries rank first in this group, while the clothes and textile industries rank in the end of this group. The enterprises marketing their end products through the sale whole traders reached 13% of the total number of SMEs in the case study. The highest rate of marketing was achieved in the industry of food and agricultural. The final product through retailers reached 10% and the textile and clothes industries rank highest in this area. As for marketing through the government showrooms, the rate was very meagre. It did not exceed 4 % of the number of enterprises, which reflects the absence of the government role in assisting the SMEs to market their products, as shown in Table (4.6) and Fig (4.8).



**Table (4.6): SMEs Classification according to the marketing pattern of final product**

Branches of SMEs	By the owner		By wholesaler		By retailer		By governmental showrooms	
	No.	%	No.	%	No.	%	No.	%
Wood Industries	39	93	2	5	0	0	1	2
Metal Industries	17	100	0	0	0	0	0	0
Food & Agr. Industries	17	63	7	26	3	11	0	0
Textile & Clothes Industries	18	47	7	18	9	24	4	11
<b>Total</b>	<b>91</b>	<b>73</b>	<b>16</b>	<b>13</b>	<b>12</b>	<b>10</b>	<b>5</b>	<b>4</b>

Source: Based on the field survey results of Ismailia, 2003.



The table besides the figure show the zise of the rate of marketing the final product through the manufacturer himself and this was clear in all the SMEs in the study area. This in itself indicates the success of the small scale industries in the area on marketing the final product. Likewise, the profit achieved by these industries will be relatively big. It saves the costs which would go to the middle institution if small scale industries relied on it to market their products. However, the auto marketing process of the end product causes two main problems at the level of the SMEs on one hand and at the level of speeding up the regional economic development.

As for the first problem, the difficulties and exhaustion became clear which the SMEs in the study area undergo to market their final products, when such enterprises work individually without coordination among each other. Thus, rapidly the gap will become large between the production and marketing. This problem exists clearly when there is stagnation in many products either in the sectors of wood, metals and even the food and clothes industries, where these industries do not find anyone to buy their products. This leads in the long run to the damage of such products and loss of their quality, and then to offer them cheaper than the cost of their production in the market.

In the study area there are also other forms of marketing difficulties, mainly the production with order. This means the stopping of employees and machinery from work until this special order is finished. If the period of delay is prolonged, this may affect the raw materials in the enterprise. As it will be shown later, a great part of SMEs which market their products themselves face a serious marketing problem which could lead to bankruptcy.

As for the speeding up of the development process in a region, the dependence of SMEs on the self-marketing to their products greatly negate the great role played by other activities like the wholesale and retail trades. Thus, this affects negatively any related job opportunities which could be provided by SMEs in the region. So the researcher sees here that the cooperation and coordination among SMEs in the study area would ensure the distribution of work between production on one hand and the marketing on the other. This, in turn, could greatly contribute to the sustainability of such enterprises and ensure their development in the light of the heated competition coming from the other sizes of enterprises.

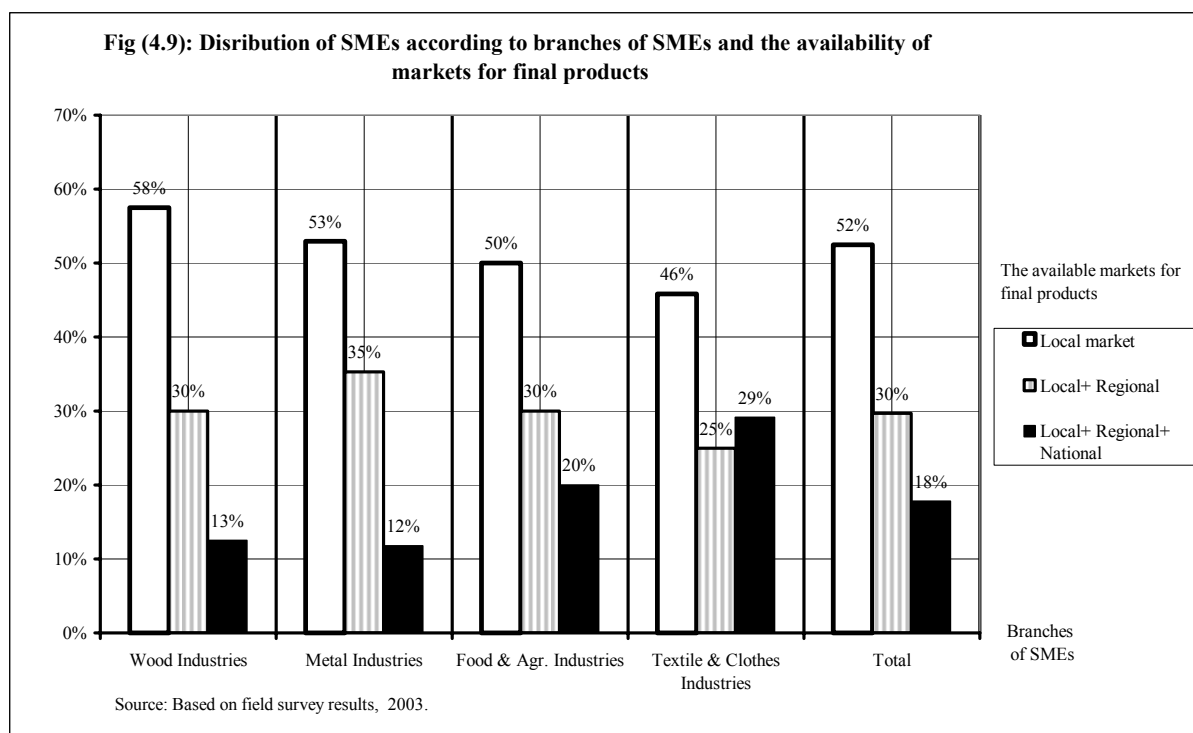
#### 4.2.7 Availability of markets for final products

The field study shows that about 52% of the enterprises in the study area market their products locally only. This was most clear in the wood industries sector. About 30% of the enterprises can market their products locally and regionally. The metal industries sector coming at the top of this group. A small portion of the enterprises (not exceeding 18%) can market their products locally, regionally and at national level as well. The textile and garments industries sector coming at the top of this group. Table (4.7) and Fig (4.9) classify SMEs according to the available markets for final product.

**Table (4.7): Distribution of SMEs according to the availability of markets for final products and branches of SMEs**

Branches of SMEs	Availability of markets for final products						Total
	Local market		Local + regional market		Local + regional + national market		
	No.	%	No.	%	No.	%	
<b>Wood Industries</b>	23	58%	12	30%	5	13%	40
<b>Metal Industries</b>	9	53%	6	35%	2	12%	17
<b>Food &amp; Agr. Industries</b>	10	50%	6	30%	4	20%	20
<b>Textile &amp; Clothes Industries</b>	11	46%	6	25%	7	29%	24
<b>Total</b>	53	52%	30	30%	18	18%	101

Source: Based on the field survey results of Ismailia, 2003.



From the Fig (4.9) and Table (4.7), it is shown that SMEs in the study area are originally local ones which depend primarily on the local marketing, but this does not deny their national role even if it is relatively weak. However, the small scale industries intend to cover mainly the local needs. In the study area it was found that some of these enterprises expanded to include the regional sphere. This, from the researcher's point of view, is a good indicator of the ability of the small scale industries to compete in different markets and activating the economic activities at all levels.

It is even possible to re-activate these enterprises and strengthen their role including opening new markets to market articles and products. This can be further implemented through cooperation of the small scale industries in the same region with each others in a way that lessens the cost of the production. On the other hand this cooperation will help these enterprises also to availing from the size-economies and produce commodities competing in the national market. They even could open new markets at the international level as in the case of Italian experiment.

#### 4.2.8 Marketing frequency of end products

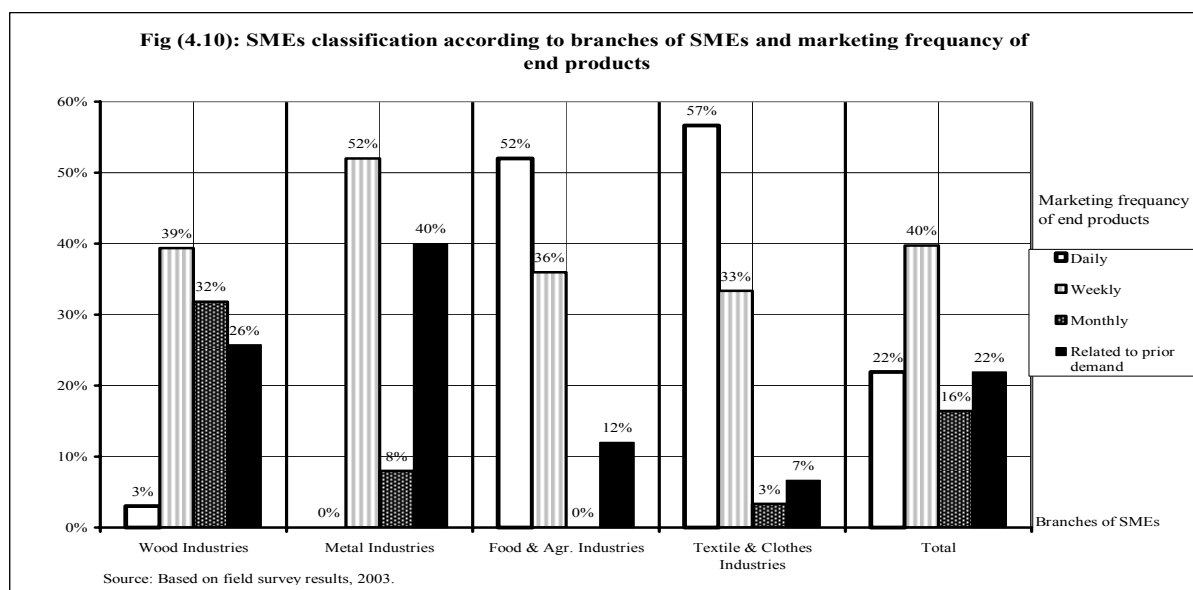
The field study shows that about 22% of the enterprises in the study area market their products daily. The textile and clothes industries coming on top of these enterprises while wood and metal industries rank last on this list. As for the enterprises marketing their products weekly, they reached 40 % of the total SMEs in the study area. The metal industries are coming on top of this group. As for the enterprises which market their products monthly, they reached 16 % of the total SMEs in the study area. The wood industries are coming on top of the stated group. As for the enterprises which market their products with order or with agreement with the clients, they reached 22% of SMEs. The metal industries are coming at the top. Table (4.8) and Fig (4.10) show the classification of the small scale industries according to the rate of the end product in the study area.

**Table (4.8): SMEs classification according to branches of SMEs and marketing frequency of end products**

Branches of SMEs	Daily		Weekly		Monthly		Related to demand		Total
	No.	%	No.	%	No.	%	No.	%	
Wood Industries	1	3	16	39	13	32	10	26	40
Metal Industries	0	0	9	52	1	8	7	40	17
Food & Agr. Industries	10	52	7	36	0	0	2	12	20
Textile & Clothes Industries	14	57	8	33	1	3	2	7	24
<b>Total</b>	<b>25</b>	<b>25</b>	<b>40</b>	<b>39</b>	<b>15</b>	<b>15</b>	<b>21</b>	<b>21</b>	<b>101</b>

Source: Based on the field survey results of Ismailia, 2003.

Table (4.8) and Fig (4.10) show that, more than 60% of SMEs in the study area market their products periodically daily or weekly. This pattern is considered relatively close to the concept of sustainable development. But the marketing pattern, which is considered very far from the sustainability concept, is the pattern of marketing related to previous demand.



This pattern causes a big problem for the enterprises because it is done with order. One of its disadvantages is that, it has no specific time to finish, which makes the manufacturer unsure when he will finish such a product, or he will wait until someone contracts with him for a specific period. This will put the manufacturer under pressure for that product. This problem (resulting from such a way) must be solved. Likewise, the marketing at a monthly level or more is also far from the proper concept of the sustainability. Therefore, SMEs can not incur the costs of long term production because their capital is relatively small and at the same time they have their own commitments towards the employees who are paid weekly at the maximum. So the long waiting for marketing the product is a great obstacle in the way of continuation of SMEs in the region. These two types aforementioned make up a considerable percentage in the study area, estimated at about 40% of the SMEs in the study area.

#### 4.2.9 Summary

The cost-benefit analysis and the analysis of added value show that, the SMEs in the study area made a great success only at the enterprise level. This was realized by 85% of the SMEs in the study area. However, their ability to drive the economic chain of added value in the region has not been realized until now. This has been due to the fact that each SME in target area works alone as there is no form of cooperation between SMEs or groups. Such matters require that each SME should perform most of the roles in the production process. This results in weakening these enterprises and adding burdens to them. In spite of this fact, a large ratio of such SMEs in the target area has been successful up to now in performing these roles. Otherwise, from a research point of view, these will not be able to be sustained for a long period of time due to this burden that they bear.

The best evidence to substantiate this is that the production of a ratio of not less than 22% of the study sample depended on prior agreements with the client. This means that without prior agreements, there was no production. This is known as temporary unemployment or a temporary freeze of activity. This freeze may have lasted for a few days; however, it sometimes may have lasted for an entire month in some enterprises. Also, not less than 73% of study sample is attempting to market its products on their own; this matter only increased the difficulties these small enterprises face. Only 23% of these enterprises have agreed with the wholesale and retail trades to market their products. About 71% of SMEs in the study area incur the burden of providing all the requirements of the production necessary for their industries from the national markets, and incurring the burden of storing them in proper places. This affects not only the sustainability of SMEs negatively in the long run, but also obstructs the roles of other entities with specialized enterprises expertise that could have performed these tasks more efficiently.

The modest contribution of SMEs to energizing the chain of activities and added value within the region manifests itself through a variety of limiting mechanisms. First, SMEs do hardly cooperate with other institutions in the marketing of final products. Second, employees tend to be hired from within the region; on average the percentage of employees coming from outside of the region to work is approximately 14% of the total study area labourers. Generally speaking, this group of employees tends to use public transportation, thereby contributing to and activating yet another aspect of positive regional development. A large ratio of study area enterprises rely upon the importation of raw materials from the national and international markets (i.e., 77% of SMEs in the study area). As a result, the diversity of transportation facilities used to bring forth raw materials together with the marketing of the final product at national and regional levels would ultimately enhance the capability of SMEs in the study area to drive regional economic development. In spite of the fact that this runs counter to the notion that sustainable regional development encourages the use of local raw materials, this activity would greatly enhance the role of SMEs in accelerating the regional economic momentum.

Accordingly, the research highlights the fact that the limited contribution of SMEs along with all the obstructions to enhancing their role in contributing to the chain of added value within the region is due to the lack of coordination and the presence of "individualism." SMEs in the study area do not have an adequate awareness of the value of establishing cooperation between enterprises within production functions in order to complement one another's activities.

## **4.3 SMEs and job opportunities**

### **4.3.1 Introduction**

The phenomenon of slow growth of the global economy, without taking into consideration the difference among the economic systems and the levels of development, mostly left a positive effect due to mounting awareness of SMEs and their importance. This pushed many countries to design policies and programs aiming to expand and support these enterprises, particularly the rate of maintenance and continuation is still selective, and the risks of shortcomings and insolvency are still expected in all fields of the industry. SMEs\* can absorb a significant part of the effects resulting from economic crisis and stagnation, which were, among other reasons, one of the factors which led to adopt policies of economic reform and manufacturing reorganizing in several countries (Arabian Work Organization 1994).

Among these policies are measures of privatization of the public sector, which led to layoffs in great numbers of public employees, and encouraging the individual initiatives. All this paved the way for the SMEs so that they play an effective role in economic development either in developing or developed countries. Before, SMEs were regarded only as part of a heritage from a dormant economy, now the SMEs have attracted more employees at the expense of the giant public enterprises in socialism. There are expectations and hopes, in most world countries, showing that more job opportunities and investments, and thus economic development, would be generated through the growing reliance on the individual commercial initiatives and reinforcement of the role of the private sector (Arabian Work Organization 1994).

Recent studies show that the proper investment of capital in SMEs creates more job opportunities than investing the same amounts of capital in larger manufacturing enterprises. SMEs are also more practical in countries with abundant employees where there is a lack of capital. Thus, these enterprises serve as a place of creating job opportunities and, therefore, reinforce the status of such SMEs as a tool and a mechanism for fighting unemployment and minimizing unorganized work. SMEs can play a very important role in generating a fair distribution of income and purchasing power. The SMEs proved efficient in limiting the rural exodus into urban areas. They can help to stop the migration of current rural employees who build and live in slum areas on the outskirts of large cities. The SMEs can also play an effective role in creating manufacturing decentralization which provides job opportunities in invariably all areas regardless of the nature of the area. This helps to create the proper investment of resources and to mobilize capital and reactivate the national savings (Arabian Work Organization 1994).

SMEs now make up the most important sector in most world countries, in general due to the above mentioned advantages, as well as not to mention, the conditions of the world economy. They provide employment and opportunity for millions of individuals; their work is strongly customer-orientated; they are a source of innovation and entrepreneurial character; and they create competition and are the kernel for enterprises of the future (Hillary 2000). The world-wide contribution of SMEs to economic development is significant. About 90% of all the enterprises in the world are SMEs. They are responsible for 50-60% of total employment in the world. In OECD countries 95% of enterprises are SMEs and 60-70% of jobs are in these enterprises. In developing countries, the economic importance

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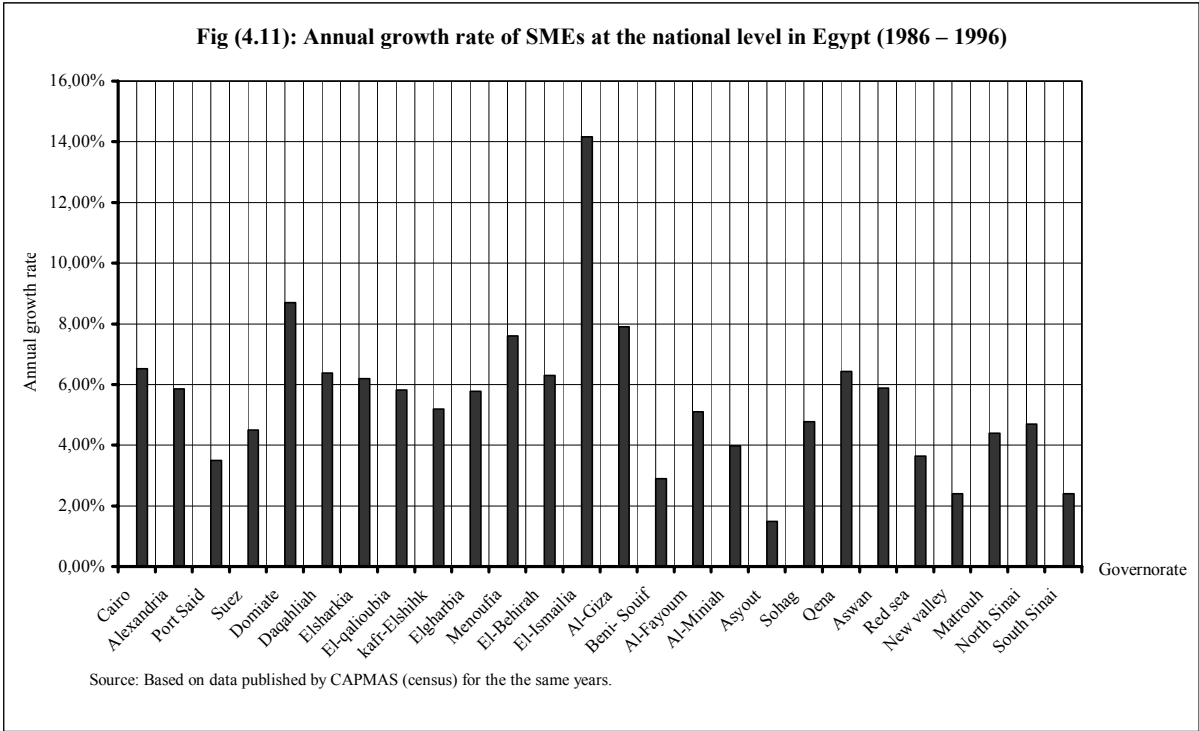
\* In this dissertation the abbreviation SMEs is used in different ways according to the specific context. In chapter 1, 2, 3 the term refers to small and medium enterprises in general, whereas in chapter 4, 5, 6, 7 the term is used as abbreviation for small manufacturing enterprises of which most are micro enterprises.

of SMEs is similarly high. The global trend of larger enterprises to reorganize, downsize and outsource, and the increase in franchising and self-employment increases the number of SMEs (UNEP 2003).

This topic aims to test the ability of the SMEs in Egypt to play a key role in the field of employment and creating new job opportunities in the regional economy. This will be done through recognizing how much these enterprises could contribute to the enhancement of the regional economy in terms of the number of enterprises and the number of employees, therein, at the level of Ismailia Governorate (the study area). The study also is designed to recognize the growth rate of the SMEs and its employees compared to the growth rates in other enterprises. This will weight the role which these SMEs play compared to the other sizes of industries at the study area level. This comparison will also highlight the importance of the four selected types of SMEs, namely, the industries of wood, metal, food and agriculture, and clothes and textiles, as to the extent which they are able to provide job opportunities within the sector of SMEs, in general, at the Ismailia Governorate level as the case study.

**4.3.2 Status of the SMEs in general at the level of Ismailia Governorate**

Ismailia is characterized as SMEs attracting governorate, achieving the highest annual growth rate out of these enterprises compared to any governorate at the level of the republic of Egypt in the recent decades. There are factors which led to this result, mainly the provision of the components of investment such as the excellent location on the Suez Canal and Bohairat el Temsah, the provision of the infrastructure of enterprises: raw materials, land good for all kinds of investment and, above this, the existence of the Technology Valley there. In addition, the governorate provided areas especially designed for the SMEs within the manufacturing zones in the governorate. Fig (4.11) illustrates the annual growth rate of the enterprises in Ismailia Governorate compared to the other governorates of Egypt.



It turned out that the governorate achieved an annual growth rate estimated at 14,2%, while the general average of the growth of these enterprises at the level of the republic stood at 6%, with Damietta governorate coming second at an annual rate not exceeding 9%. This shows that the SMEs are given due attention at the level of the governorate in general. In this study we are not discussing the analysis of the reasons behind the rise of the growth rate in the MSEs in the governorate in comparison to the other governorates, but the topic of the study discusses how far the SMEs are able to attract labour and create more job opportunities at the regional level. So the point is to get close to the SMEs and try to know their status within the governorate of Ismailia from a more comprehensive perspective, mainly the national level. Then we can get down into the subject with more detail at the level of the governorate to recognize the role played by the SMEs in employing the labour and creating job opportunities, and if these industries are successful in playing this role or there are troubles they face. This is what we will know in the following lines.

#### 4.3.3 Contribution of SMEs in terms of labour and enterprises at the level of Ismailia

The sector of SMEs in Ismailia is considered the most important economic sector in the region. Whereby, this sector provides job opportunities for great number of employees. The contribution of SMEs, in terms of enterprises and employees, is considered the highest among the larger sizes of enterprises. Thus Fig (4.12) and Table (4.9) clearly show that the SMEs came first among the manufacturing enterprises, with the SMEs owning 3208 out of 3283 ones (97,7% of total enterprises), which are the total of the enterprises of the manufacturing sector in the governorate. It is followed by the medium enterprises at a ratio of 1,7%, while the number of the enterprises within the large enterprises did not exceed 1%. As for labour, the SMEs came also first with 11394 employees therein, at a ratio of 40,22%, while the very large industries came second at a ratio of 35,9%, the big industries came third at a ratio of 17,3%, and the middle size industries occupies the back grade at a ratio of 6,6%. Table (4.9) and Fig (4.12) illustrate the distribution of both the employees and enterprises to the various sizes within the industry sector in Ismailia governorate in the year 2002.

**Table (4.9): Distribution of the employees and the enterprises according to various sizes of industry in Ismailia 2002**

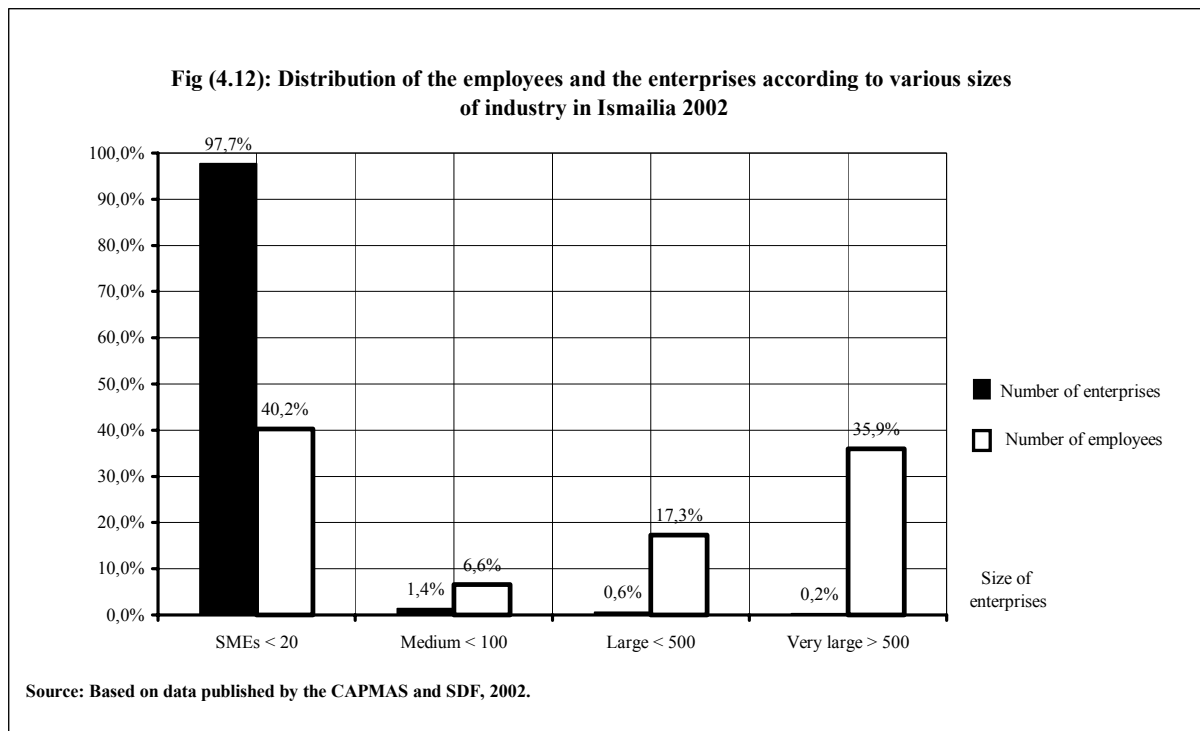
Size of enterprises	Enterprises		Employees	
	No.	%	No.	%
<b>Small &lt; 20</b>	3208	97.72	11394	40.22
<b>Medium &lt; 100</b>	46	1.40	1865	6.58
<b>Large &lt; 500</b>	21	0.64	4891	17.27
<b>Very large &gt; 500</b>	8	0.24	10176	35.92
<b>Total</b>	3283	100.00	28326	100.00

Source : Compiled by the researcher based on data issued by the CAPMAS in 1996- upgrading the data of the SMEs by adding them to the SDF , data on the artifact enterprises and the SMEs registered in Ismailia governorate ,tracing their activities from the year 1996 until the year 2002.

SMEs in Ismailia Governorate is classified into 15 types, with most of the labour, mainly 85,2%, and most enterprises, mainly 87,3% concentrated only in four kinds: the food and agricultural enterprises, clothes and textiles, wood and furniture, and the metal enterprises. The rest of enterprises, less than



15% of labour and less than 13% of enterprises are distributed among the remaining eleven kinds within the sector of the SMEs in the governorate.



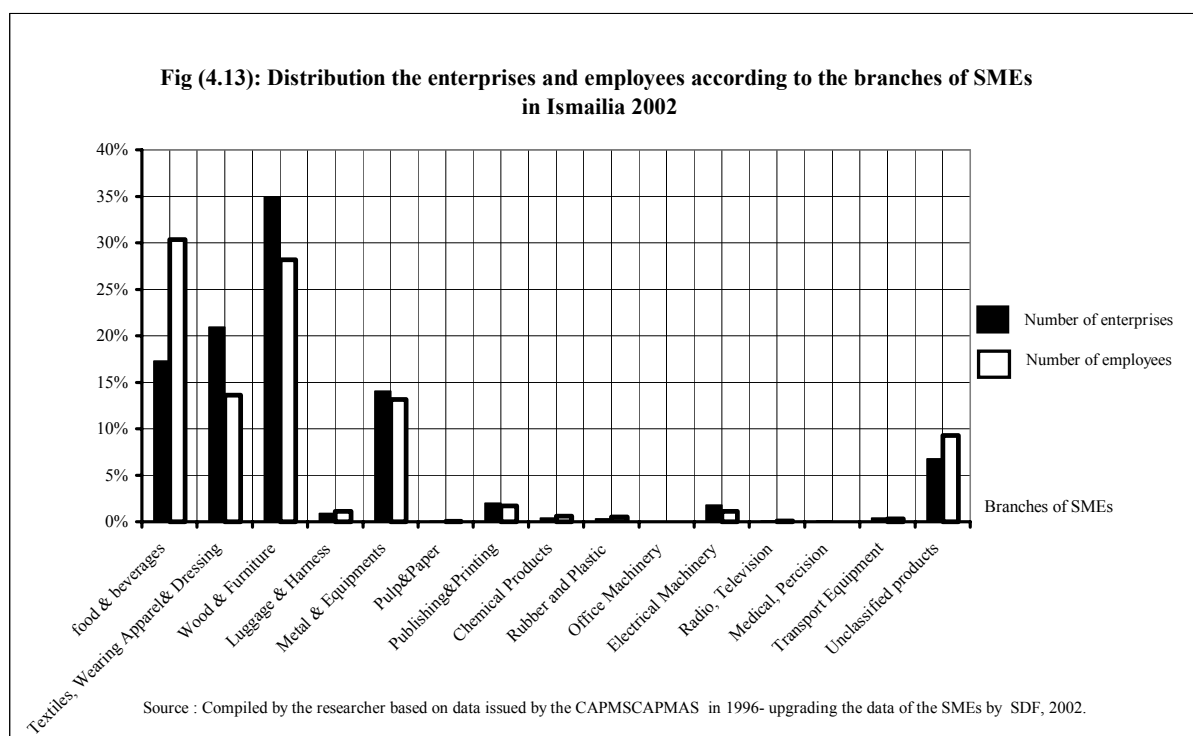
In general, the wood and furniture enterprises take the lead within the SMEs in terms of the number of enterprises, at a percentage of 34,9%, followed by the clothes and textile enterprises at a percentage of 21%, then the agricultural and food enterprises at a percentage of 17,3%, while the metal enterprises came fourth at a percentage of 14,1%. As for the number of employees, the food and agricultural enterprises ranked first at a percentage of 13,2%. Table (4.10) and Fig (4.13) illustrate the distribution of percentage for the employees and facilities according to the type of the enterprise within the SMEs in Ismailia Governorate in 2002.

These four kinds of SMEs have ranked high therein, either at the level of the governorate of Ismailia or at the national level. This prompts us to give due care to these types of SMEs and highlight them to know how far they could contribute in the field of employment and creating new job opportunities in the region, as well as tackling the problems and difficulties which face these enterprises in particular. The methodology the researcher is going to follow with these enterprises within the manufacturing sector at the level of employment and enterprises. Then the research is going to give more detailed information at the level of the study area depending on the results of the field survey. These results will highlight the opportunities and constraints SMEs face to eventually help them to perform an effective role in the field of employment from the perspective of the sustainable development.

**Table (4.10): Distribution the enterprises and employees according to the branches of SMEs in Ismailia 2002**

Branches of SMEs	Enterprises		Employees	
	No.	%	No.	%
Food & beverages	554	17.27	3459	30.36
Textiles, Wearing Apparel& Dressing	672	20.95	1550	13.60
Wood & Furniture	1120	34.92	3210	28.17
Luggage & Harness	29	0.90	125	1.10
Metal & Equipments	451	14.06	1500	13.17
Pulp & Paper	1	0.04	3	0.03
Publishing & Printing	64	2.00	194	1.70
Chemical Products	13	0.40	68	0.60
Rubber and Plastic	10	0.30	57	0.50
Office Machinery	0	0.00	0	0.00
Electrical Machinery	58	1.80	125	1.10
Radio, Television	3	0.10	11	0.10
Medical, Precision	3	0.10	0	0.00
Transport Equipment	13	0.40	34	0.30
Unclassified products	217	6.76	1056	9.27
<b>Total</b>	<b>3208</b>	<b>100.00</b>	<b>11394</b>	<b>100.00</b>

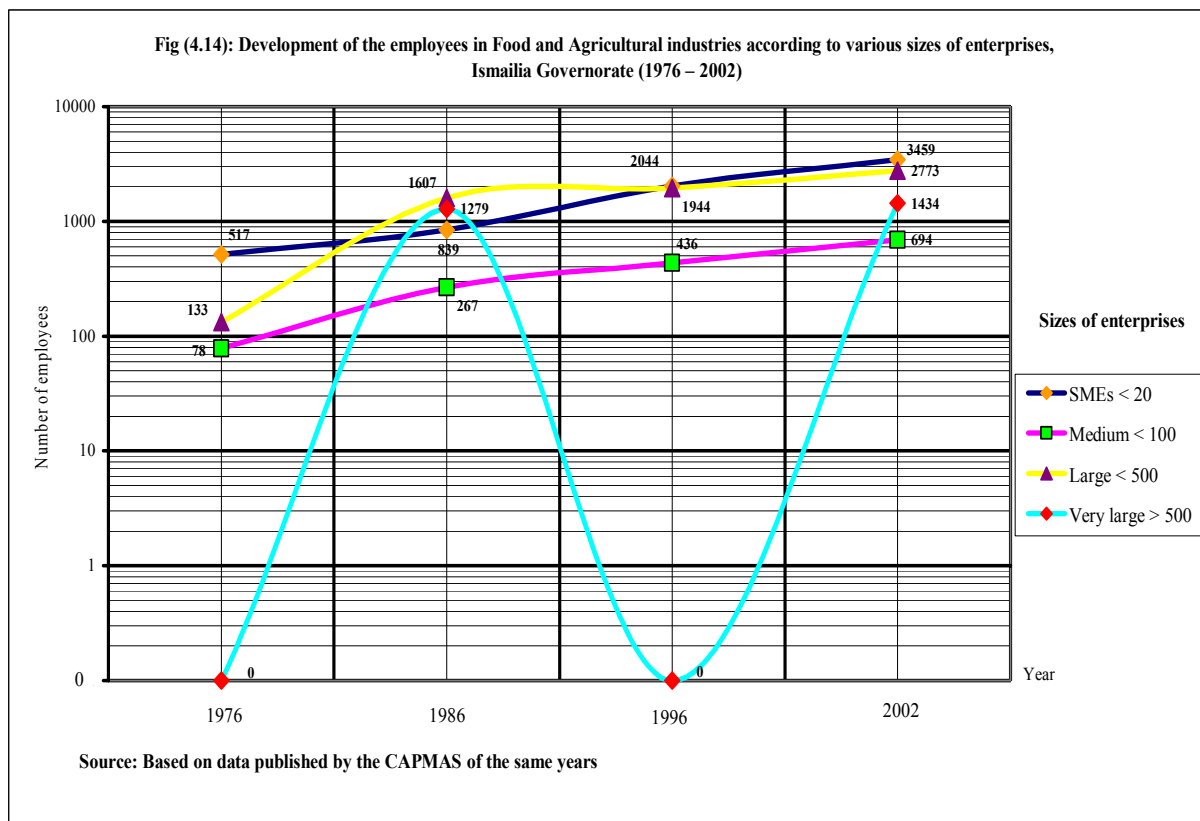
Source : Compiled by the researcher based on data issued by the CAPMAS in 1996- upgrading the data of the SMEs by SDF, 2002.



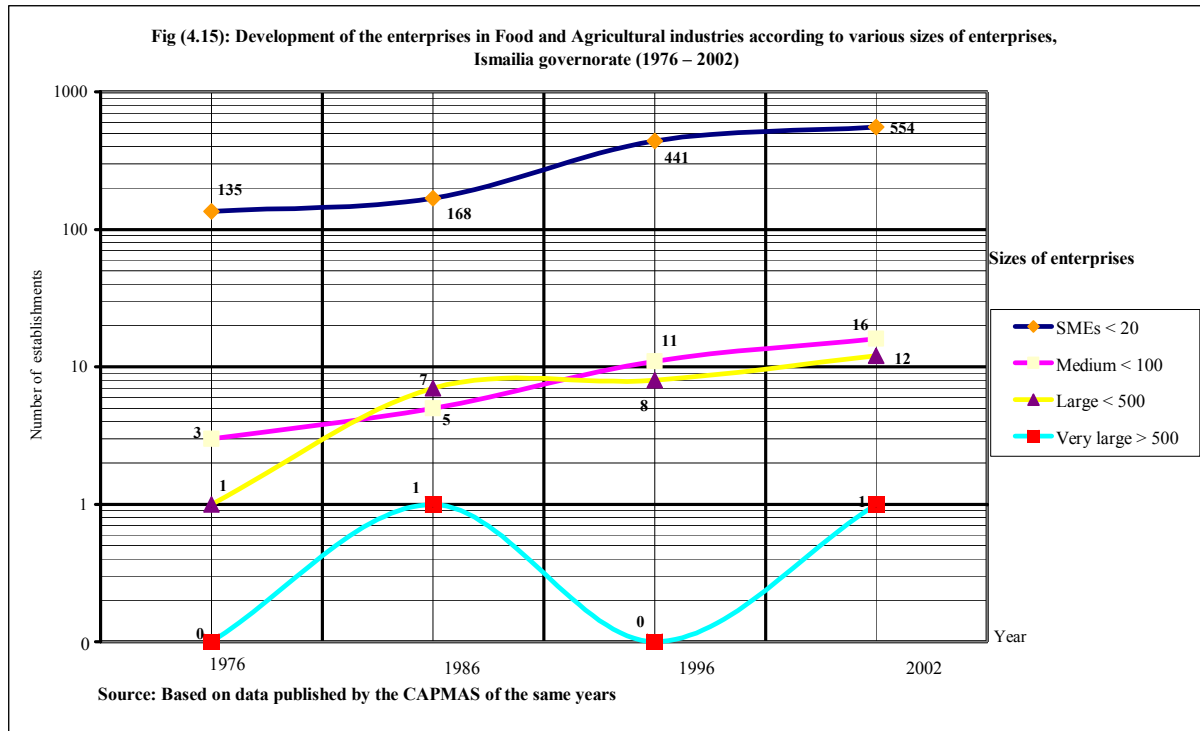
### 4.3.4 The evolution of SMEs' contribution in terms of employment and enterprises

#### 4.3.4.1 Food industries

Table (4.11) and Fig (4.14) and (4.15) illustrate the evolution of both employment and enterprises within the food and agriculture enterprises, according to the size of activity in the period between 1976 until 2002, in the governorate of Ismailia. It is noticed from the reading and analysis of the data given during this period that all sizes of industries achieved a steady increase at the level of employment and enterprises, except the big enterprises which their enterprises were reduced to only one enterprise in 1986 and were reduced to zero in 1996. And as a result, the employment also fell to 1279 and then was reduced to zero in 1996.



Here we are not going to analyze the reasons behind the closure of this big enterprise and laying-off its employees. Rather, we are concerned with another issue, mainly where did these employees go after the closure of their enterprise and in which activity they were attracted to? Did the SMEs have a role in attracting part of this labour which suddenly became an idle labour in 1986?



The research reveals that, there are several possibilities. First they may have moved to other non manufacturing activities, but this is a remote likelihood even though it may have happened. Second, they may have tended to other non food and agriculture enterprises. The most probable possibility and the most logical one is that this enterprise trimmed its labour and thus laid off a great part of its employees, turning from a very large enterprise (more than 500 employees ) in 1986 into only a large one (100-500 employees ), and the rest of employees were distributed to the medium and small enterprises. If we look thoroughly into Table (4.11), we will reach the same result.

Thus, the period from 1986 until 1996 witnessed an increase in the large enterprises enterprises from 8 ones in 1996 after they were 7 ones only in 1986, and the number of its employees increased from 1607 employees between the year 1986 and 1996 employees , at an increase by 337 employees . This means that the activity of the very large enterprise has been reduced to be a big one with the number of its employees standing at 337, i.e. 26% of the dropout labour.

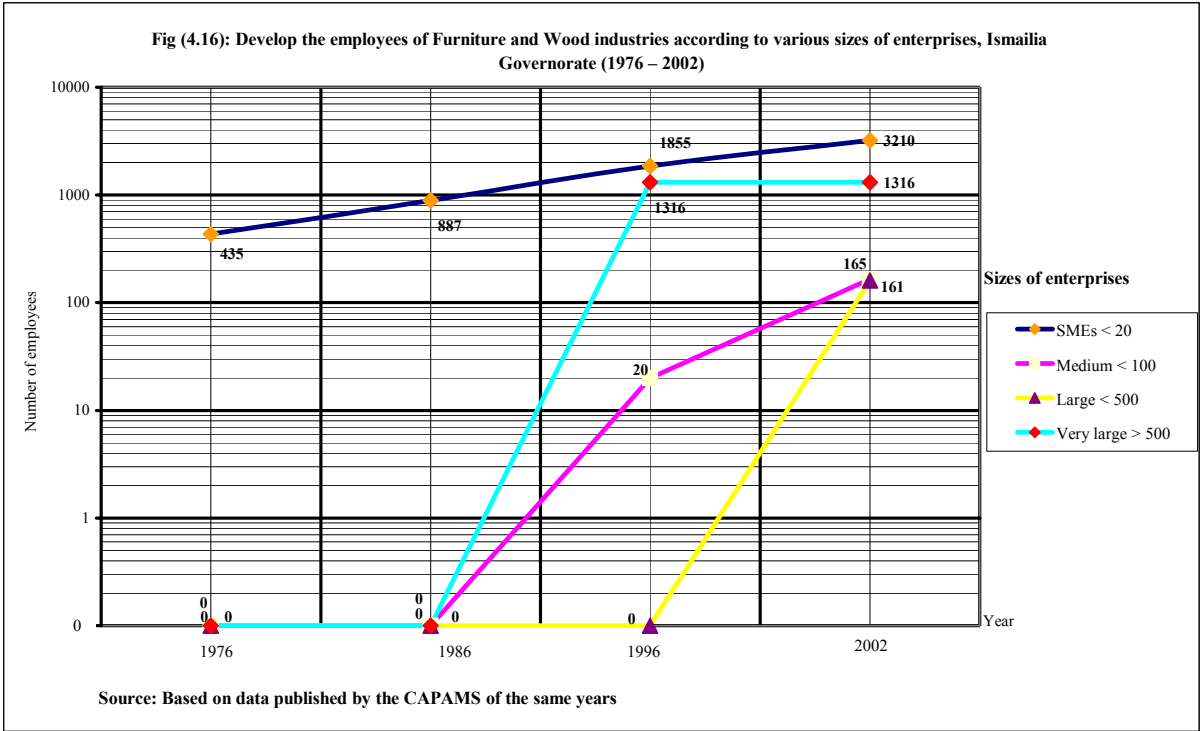
On the other hand, we also notice that the medium size facilities (20-100) has increased from 5 to 11 ones, and the number of employees therein also increased from 267 to 436 ones, at an increase of 169 employees , with an average of 28,3 employees per an enterprise . This means that the medium size enterprises were able to attract part of the laid off labour, estimated at 13% of the dropout labour. While the dropouts from the very big enterprises reached 773 ones, most of them went to the SMEs of food industries. We can see this rise clearly if we know that the number of facilities in the SMEs (1-20) has risen from 168 facilities in 1986 to 441 ones in 1996. In addition the number of employees has risen from 839 employees in 1986 to 2044 ones in 1996, at an increase of 1205 employees, at an average of 4,41 employees per enterprise.

Given the annual growth rate which the SMEs achieved between 1976 and 1986, hitting 5% annually, the employees expected according to this rate will become 1362 employees only instead of 2044

employees. It means that there is an increase of 682 employees, which is higher than the ordinary volume of such SMEs. It means also that the SMEs have succeeded in taking in about 53% of the idle labour which resulted from the layoffs in the very big enterprises, and there remained only 91 employees representing 7% of the total layoffs, and they may have tended to working in other enterprises or other non manufacturing enterprises. The point is that we draw the attention that the SMEs are actually able to take in great numbers of labour; it even succeeded in competing with the other volumes in attracting this labour, but it must be taken into account that they have big problems which obstruct their ability to continue and to compete, as will be shown later on.

**4.3.4.2 Furniture and wood enterprises**

Table (4.11), Fig (4.16) and (4.17) illustrate the evolution of both the labour and enterprises within the furniture and wood products enterprises in the governorate of Ismailia according to the volume of activity for the period between 1976 and 2002. This means that the furniture and wood industry in the governorate of Ismailia belongs mainly to the SMEs. No other sizes of industries emerged to compete within this industry until the year 1996. The first enterprise of wood industries of medium size volume recorded 20 employees, a number which rose to 5 enterprises in 2002 with labour estimated at 165 employees.

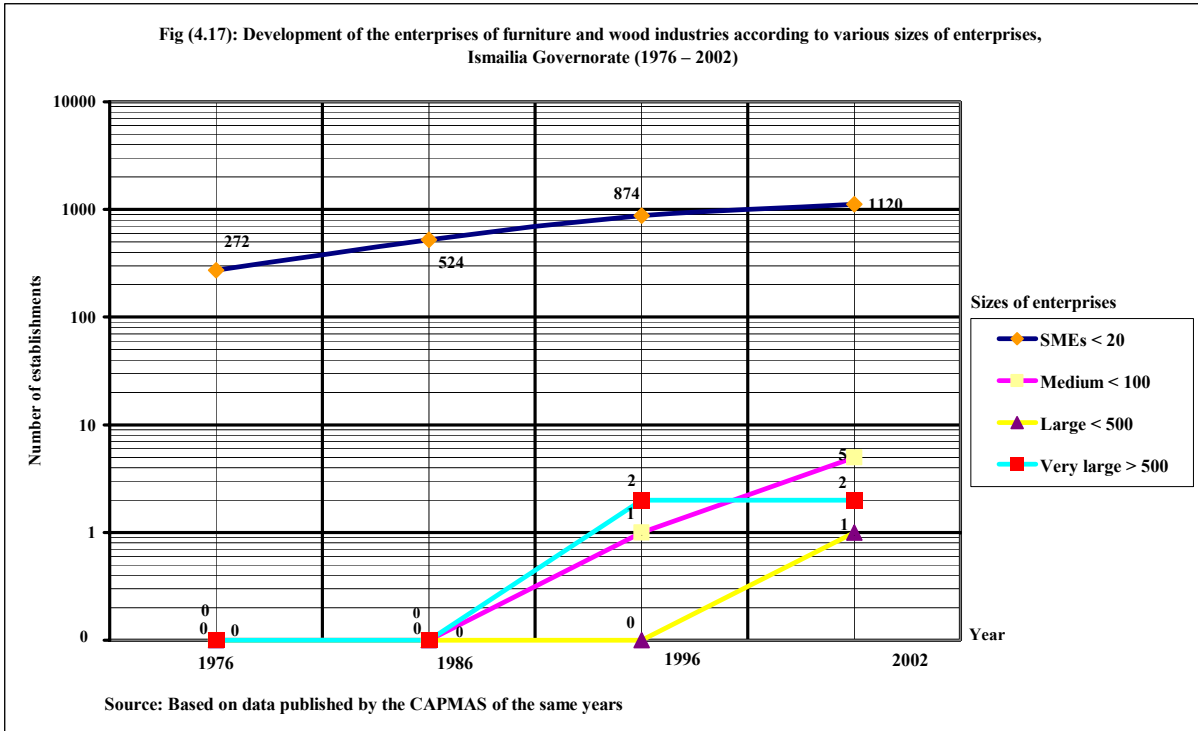


The first two enterprises of big size wood industries emerged with a number of labour estimated at 1316 employees but they remained unchanged in terms of employees and enterprises until the year 2002. One big size enterprise emerged in 2002 with labour of 161 employees at a time when the volume of SMEs of wood enterprises were steadily growing since 1976 until the year 2002 either in terms of employees and enterprises. In particular, the number of the enterprises in the year 2002 reached 1120 ones taking in 3210 employees, which shows the great ability of the SMEs in the area of furniture and wood enterprises to take in more labour than the other sizes of industries.

**Table (4.11): Development of the enterprises and the employees in the manufacturing sector, according to size and branches of enterprise in Ismailia governorate (1976 – 2002)**

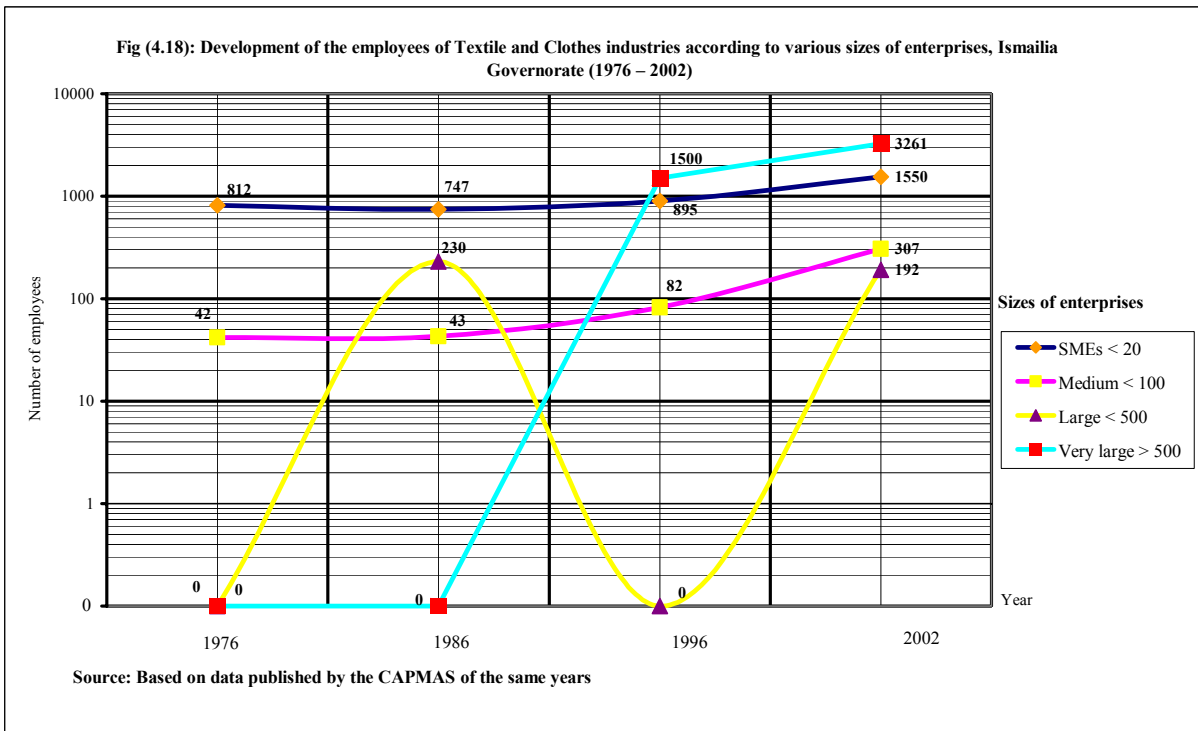
Size of enterprises	Branches of enterprises	Year 76		Year 86		Year 96		Year 2002	
		Estab.	Empl.	Estab.	Empl.	Estab.	Empl.	Estab.	Empl.
<b>Small manufacturing enterprises &lt; 20</b>	Food	135	517	168	839	441	2044	554	3459
	Woods	272	435	524	887	874	1855	1120	3210
	textile	561	812	504	747	531	895	672	1550
	Metals	225	2300	314	725	374	844	451	1500
	Total SMEs	1193	4064	1510	3198	2220	5638	2797	9719
<b>Medium manufacturing enterprises 20 - 100</b>	Food	3	78	5	267	11	436	16	694
	Woods	0	0	0	0	1	20	5	165
	textile	1	42	1	43	2	82	7	307
	Metals	3	270	8	366	5	165	18	699
	Total MMEs	7	390	14	676	19	703	46	1865
<b>Large manufacturing enterprises 100 - 500</b>	Food	1	133	7	1607	8	1944	12	2773
	Woods	0	0	0	0	0	0	1	161
	textile	0	0	1	230	0	0	1	192
	Metals	3	964	5	1148	3	895	7	1765
	Total LMEs	4	1097	13	2985	11	2839	21	4891
<b>Very Large manufacturing enterprises &gt; 500</b>	Food	0	0	1	1279	0	0	1	1434
	Woods	0	0	0	0	2	1316	2	1316
	Textile	0	0	0	0	1	1500	2	3261
	Metals	0	0	1	640	1	679	3	4165
	Total SMEs	0	0	2	1919	4	3495	8	10176
<b>Total manufacturing enterprises</b>	Food	139	728	181	3992	460	4424	583	8360
	Woods	272	435	524	887	877	3191	1128	4852
	textile	562	854	506	1020	534	2477	682	5310
	Metals	231	3534	328	2879	383	2583	479	8129
	Total MEs	1204	5551	1539	8778	2254	12675	2872	26651

Source: Based on data published by the CAPMAS of the same years.

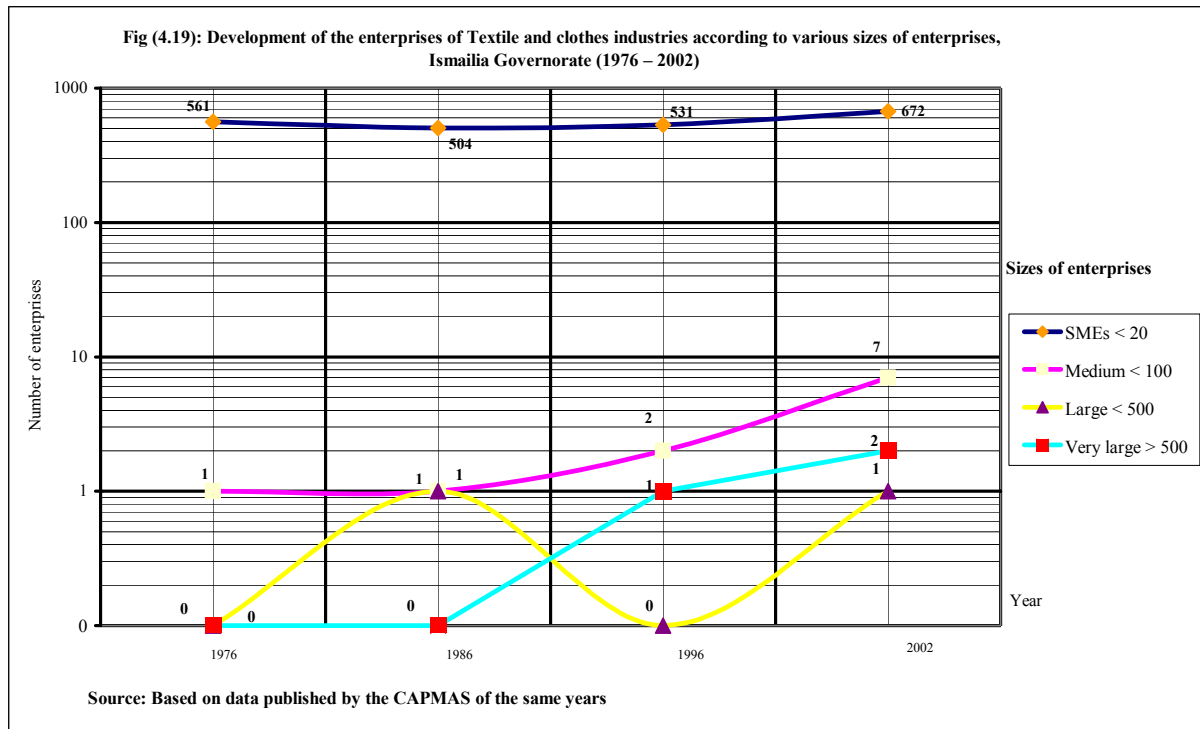


#### 4.3.4.3 Clothes and textile enterprises

Table (4.11) and Fig (4.18) and (4.19) illustrate the evolution of both labour and enterprises within the clothes and textile industry in the governorate of Ismailia according to the size of activity for the period between 1976 and 2002. Anyone who looks carefully into the data stated in Table (4.11) will see that the small size clothes and textile enterprise in Ismailia governorate suffers from faltering in growth.



This may be attributed to the lack of demand on the quality of the produced clothes by SMEs against the other sizes. Or it may be attributed to the nearness of the governorate of Port Said which turned into a free trade zone on the heel of the implementation of the open door policy adopted by Egypt as of 1974.



Thus, the town of Port Said has become a window for the imported clothes which negatively affected the clothes and textile sector in Egypt in general, particularly the towns and governorates near it like Ismailia. Therefore, we will notice that there is a great decline in the number of enterprises and employees in the sector of clothes and textiles in the governorate of Ismailia in the period between 1976 and 1986, when the number of enterprises nose-dived from 561 ones in 1976 into 504 ones in 1986, i.e. at a percentage of 10,3%, while the volume of labour also declined from 812 employees to 747 ones, i.e. at a ratio of 8%.

The growth of the small size clothes and textile industry in the governorate kept slow until the year 1996 since the number of enterprises increased to only 27 enterprises in ten years, while the number of labour rose to 895 employees, i.e. an increase of 148 employees. The competition was in favour of the big enterprises, with the first big size clothes and textile enterprise recording 230 employees in 1986 which soon turned into a gigantic enterprise in 1996 with a number of labour estimated at 1500 employees.

On the other hand, the situations were somewhat stable in the medium size of industries whose enterprises ranged between one and three, with a number of labour ranging between 42 and 82 employees between 1976 and 1996. However, from 1996 until the year 2002 there was a leap in the number of enterprises and the number of the labour in the SMEs. Thus, SMEs soared in six years only from 531 enterprises to 672 ones, at an increase of 26.5% of the number of enterprises. The number of labour rose from 895 to 1550, i.e. 73.3% of the SMEs labour in the year 1996. The indicators show the possibility of other leaps in this sector of the governorate particularly after the enacting of Law 5 for the year 2002 which invalidated the free trade zone in Port Said.



At any rate, the sudden decline in the SMEs working in the area of the clothes and textile industry is an ever lasting scenario in the field of the SMEs in general. There is not a mechanism for watching this phenomenon although it has now mushroomed. Thus, the data in this area is limited and inaccurate. It is true that there are some SMEs registered with the government apparatuses but they are few compared to the ones unregistered which, in a way or another, fall under the computation made by the CAPMAS .

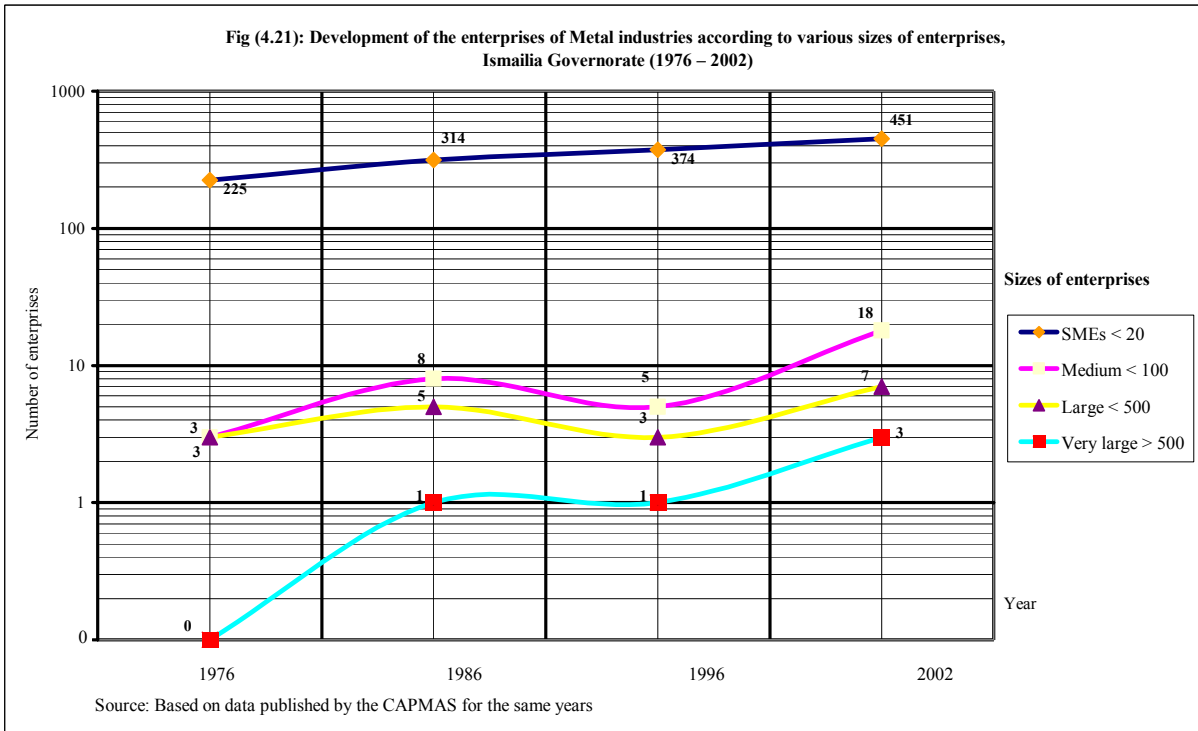
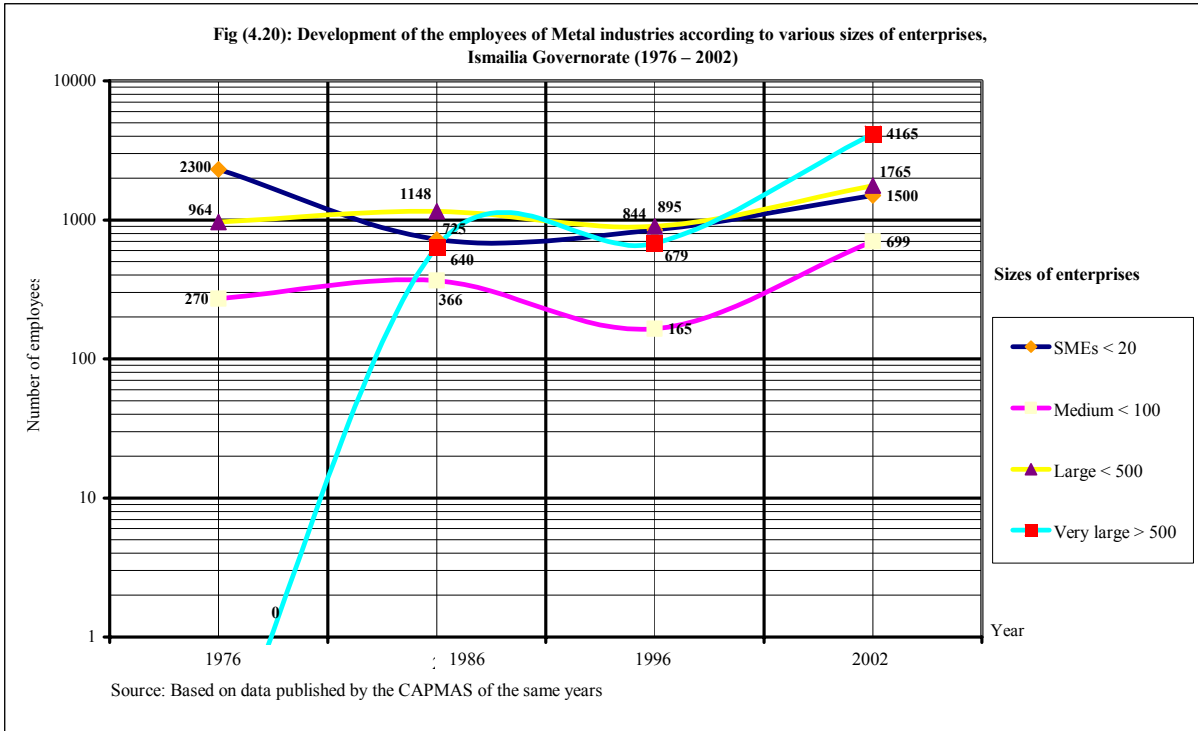
The problem also lies in that some SMEs which fall under the computation during the census suffer from closures and bankruptcy so they must not included in the calculation process, in addition that there are enterprises which start their activities and go bankrupt and close without being census period of population and enterprises (each 10 years). So, to avoid this problem, it requires several field studies to observe these phenomena and tackling the causes of failure. And this will help to put solutions for this phenomenon.

#### **4.3.4.4 Metal enterprises**

Table (4.11) and Fig (4.20) and (4.21) illustrate the evolution of both the labour and the enterprises in the metal enterprises in the governorate of Ismailia according to the size of activity in the period between 1976 and 2002. The data show that SMEs achieved a steady growth throughout the successive decades in terms of the number of enterprises, but it differs when it comes to the issue of employees. Thus, SMEs started in 1976 with a large number of employees reached 2300 employees in 225 enterprises, i.e. 10.2 employees for each enterprise. The number suddenly nosedived in 1986 to reach 725 employees in 314 enterprises, i.e. 2.3 employees for each enterprise.

It means that the loss in the manufacturing labour of small size reached 68% compared to the same size in 1986. This loss was in favour of the other size of enterprises whose employees increased in this period, particularly the large size ones. The large size industries recorded their first enterprise in 1986 with a volume of labour of 640 employees, who mainly came from SMEs sector. In 1996, SMEs started anew to vie for labour, as we noticed the nosedive in the labour and enterprises in the areas of medium and large size enterprises while they increased in the small-sized enterprises. At the same time, the very large size enterprises maintained their stability in terms of labour that slightly increased, and enterprises which did not exceed one in number. From 1996 until 2002, we notice a parallel increase in all Sizes of enterprises, albeit there is disparity in terms of employees and enterprises. Both small and large scale enterprises doubled roughly two fold in terms of labour, while the medium size enterprises doubled roughly 5.5 times.

From the previous presentation of the contribution of SMEs in terms of employees and enterprises for a long time in Ismailia, it became clear that, the SMEs are flexible and able to absorb employees more than other sizes. But this sector still suffers from many structural problems which negatively affects their ability to continue and compete in the domain of employment and provision of real job opportunities. These problems are varying from industry to another and from location to another. So the field study has great importance to get closer to the problems facing the SMEs preventing them from playing their regional role in the field of employment and labour.



#### 4.3.5 SMEs and job opportunities – field survey results

This study gives further detail on how far the SMEs can provide suitable job opportunities for their employees. This issue is traced by analyzing the results of the field studies made on a representative sample of SMEs within various urban settlements in the governorate of Ismailia. The research got acquainted with the annual growth rate of these enterprises and the date of operating of activity. The research will try to tie the date of operating with the official periodical census of enterprises in Egypt (each 10 years). This will help to avoid shortcomings in the area of statistics.

The field survey will also enable us to know in detail and in reality the problems which obstruct the SMEs and may eventually obstruct the continuation of them. It will be also recognized the capacity of the SMEs to take on labour either those with experience or without experience at all, and what is the significance of this. It will also recognize the ability of these enterprises to compete with the other sizes and activities in the area of labour. The following are the results of the field survey.

#### 4.3.5.1 SMEs and the date of the commencement of the activity and the annual growth rate

The field study shows that about 7% of SMEs in the study area was established before 1976, i.e. about 30 years ago. 10.9% of these enterprises were established in the period between 1976 and 1986 at an annual growth rate of 10 %. About 35.6% of SMEs was established in the period from 1986 to 1996 at an annual growth rate estimated at 12%. The largest part of these enterprises (46.5%) was established in the period from 1996 until 2003 (year of the field survey) at an annual growth rate of 9% as shown in Table (4.12), Fig (4.22) and (4.23).

**Table (4.12): Annual growth rate of SMEs in the study area according to branches of SMEs**

Branches of SMEs	Till 1976	Year of 1986		Year of 1996		Year of 2003	
	No. of enterprises	Annual growth rate	No. of enterprises	Annual growth rate	No. of enterprises	Annual growth rate	No. of enterprises
Wood industries	1	20%	6	13%	21	10%	40
Metal industries	1	12%	3	15%	12	5%	17
Food & Agr. industries	1	7%	2	15%	8	14%	20
Textile & Clothes industries	4	6%	7	6%	13	9%	24
<b>Total</b>	<b>7</b>	<b>10%</b>	<b>18</b>	<b>12%</b>	<b>54</b>	<b>9%</b>	<b>101</b>

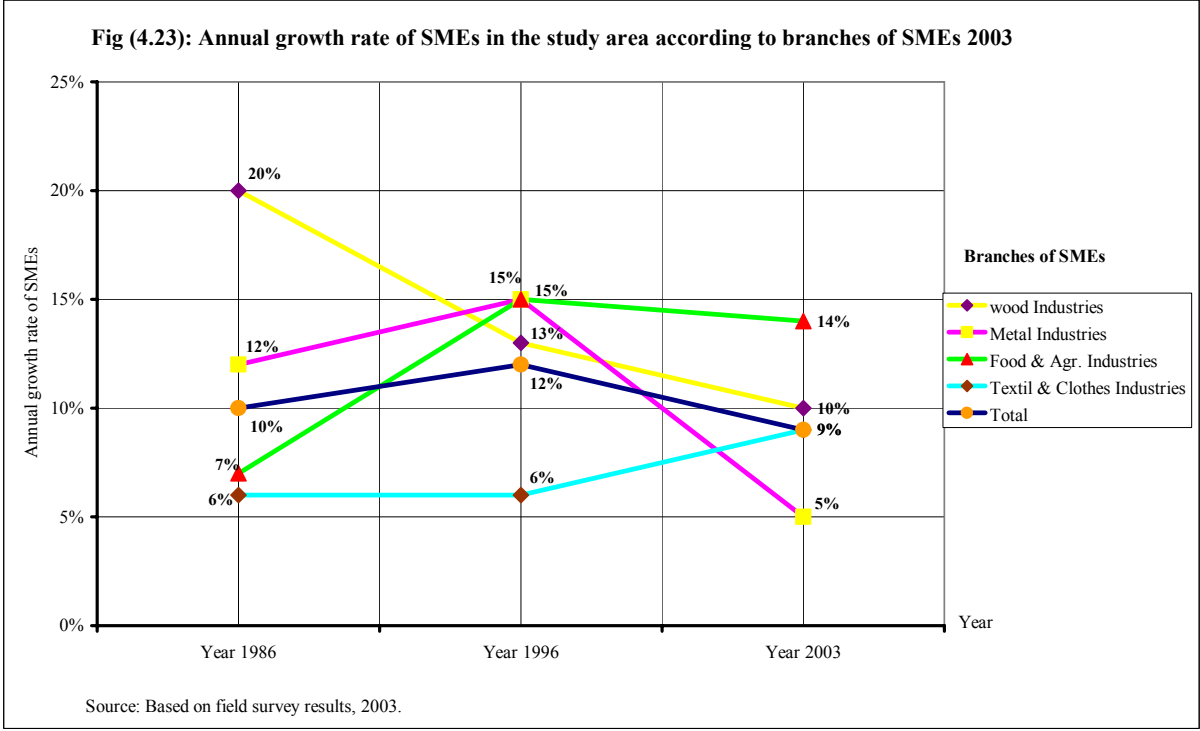
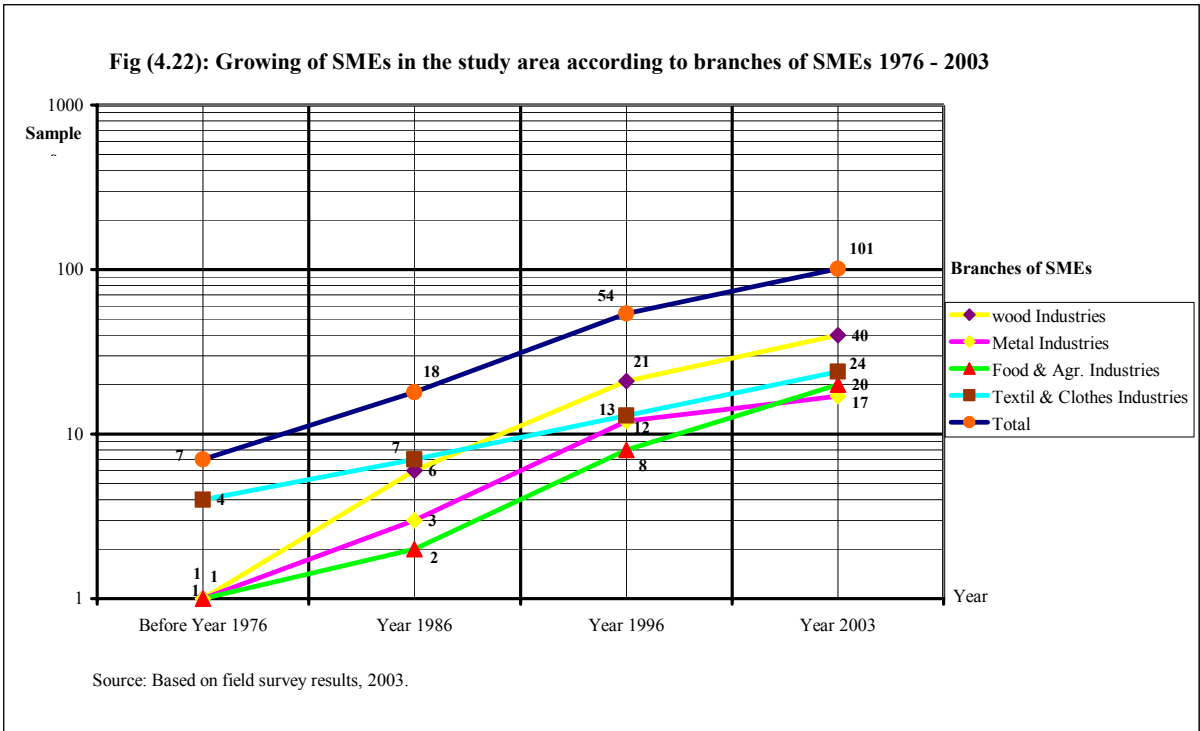
Source: Based on the field survey results of Ismailia, 2003.

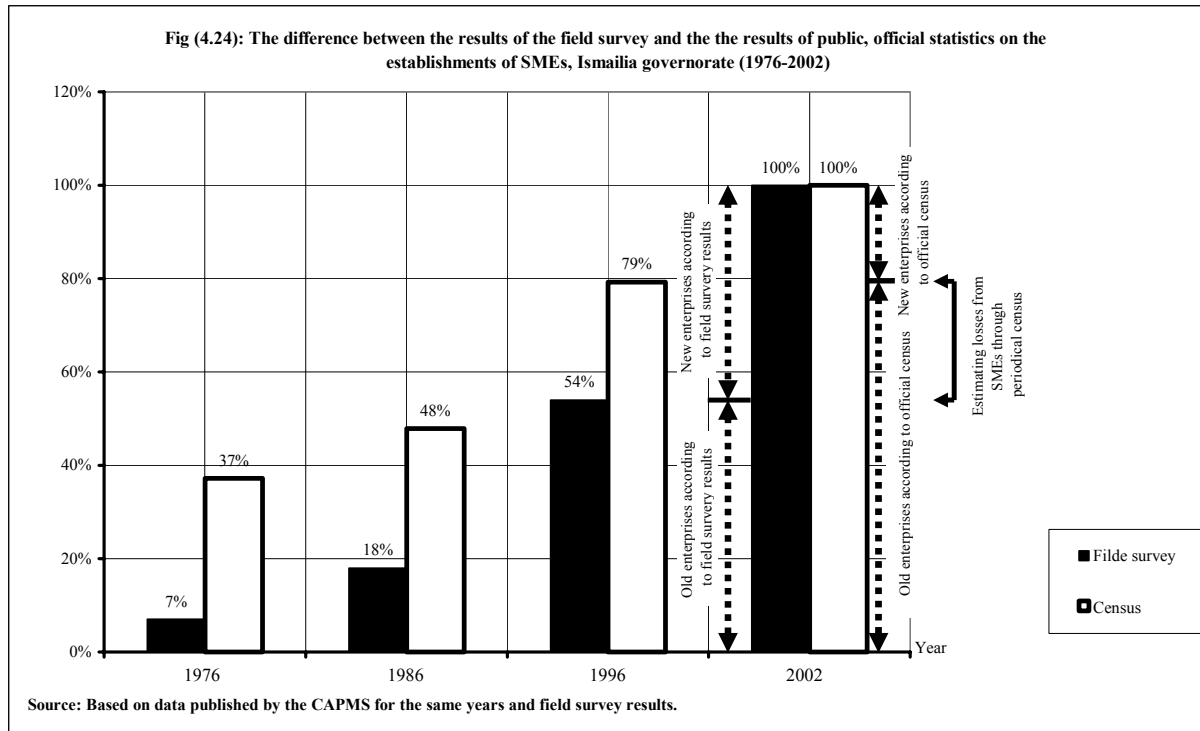
It is noted that the results of the field survey are quite different from those obtained through the official statistics on enterprises. Thus, it is noticed that the rate of the enterprises which commenced their activities before 1976 did not exceed 7% in the field survey, while the official statistics show that the rate of enterprises was 37% in the same year. Also, the number of enterprises in the study area reached 18% in 1986, while it was 48% in the official statistics for the same year. Besides, the number of old enterprises (enterprises were established before 1996) did not exceed 54% in the study area while it reached 79% in the official statistics.

This conenterprises the view that the SMEs face great obstacles and they are not able to continue, even though it seemed that they are continuing or it seemed that they the largest in terms of number and size. But in fact, such enterprises die in an unnatural way without finding the support or sufficient protection which could save them. Fig (4.24) shows the gap between the results of the field survey and the official statistics on the enterprises from the period of 1976 until 2003.

The date of commencement of the activity is an important indicator in the sustainable development, and it is also an important indicator in measuring the success of enterprises. The older the enterprise the more successful it is, because if it was not so, it would not be able to exist all this period. The success we mean here is namely the economic success. But did these enterprises achieve social and ecological success, which are the complementary dimensions of the economic dimension on the road

to sustainable development? This is what we will try to verify later when studying the social and ecological effects of these enterprises.





The field survey shows that more than 50% SMEs are considered old enterprises, i.e. they are older than ten years of age. The annual growth rate of SMEs in the study area reached 9% in the year 2003. If this rate continues until the year 2010, the number of SMEs in the study area will rise from 3208 enterprises in the year 2003 to 6392 ones, up 3184 enterprise. This brings in a cautious optimism if the ecological factor is not taken into consideration.

#### 4.3.5.2 Previous job immediately before starting the current enterprises

The field study shows that agriculture was the activity of 7% of the entrepreneurs before they turned to the current enterprises. About 6% of the entrepreneurs were working in similar activities to the current enterprises. While 87% of them have never worked in any activity before they embarked on the current enterprises. Most of the entrepreneurs grew up through the enterprises which they are currently practicing. They gradually shifted from the simple works until they became entrepreneurs. It is worth mentioning that about 92% of the entrepreneurs acquired their experience in the field of manufacturing either through inheritance or training or working in similar enterprises .

At the level of the employees in enterprises, only 3% of the sample had their previous activity in the agriculture. And 4% had their previous activity in trade, while 17% had their previous activities in services. And those who were working in similar activity were estimated at 22% of the sample. There is a ratio of 52% of the employees who had never worked in any activity before they started their current work. This indicates the ability of the SMEs to absorb many employees and providing an inexpensive training atmosphere for them.

On asking the entrepreneurs about the reason for their shift to the manufacturing activity in the study area, 54% of them answered that seeking to boost income was their actual motive. This indicates to the rise of the income earned from SMEs compared to other activities. About 46% of them said that the motive of turning to SMEs was the wish to develop their respective activities. This gives a good indicator that the entrepreneurs started to accept the new ideas which help in developing their

activities and at the same time helps in sustaining these enterprises. When asking the employees themselves about the reason for their shift to the manufacturing activity, 100% of them said that the reason was they sought better income. This also shows the rise of the income in the SMEs filed compared to the other activities in the study area. This also may be one of the factors of attracting labour and thus prompting the shift toward the SMEs in the study area.

#### **4.3.5.3 Source of experience in SMEs**

The field study shows that the training, either in a enterprise or a factory or in a training centre, comes at the top of the sources of previous experiences for the entrepreneurs, making up 49% of the sample. The inherited experience is ranked second; it reached 43% of the sample. The technical education comes at the bottom of the list at a ratio of 3%. Ratio not less than 5% of the sample is working without having any previous experiences. At the level of the employees , the matter did not change a lot. Thus, 59 % of the sample came through training, followed by inheritance which made up 33% of the sample, while the technical education was only 1%. Percentage not less than 9% is working without getting any previous experience in SMEs in the study area.

What could negatively impact on the future of the SMEs in the governorate of Ismailia is the weakness of the role of education in providing the work market with its needs of skilled and well-trained employees. This no doubt will have the sufficient ability to develop the industry and meet the needs of the market. But unfortunately, on the level of both the entrepreneurs and employees, education plays a very weak role in granting them the acquired experience in the area of SMEs. Only 1% of the employees and 3% of the entrepreneurs received education to help them to start their work in the SMEs.

The majority of those working in these enterprises are either people who learned them from father to son or those who learned their work from their masters or bosses in a factory of company, making the same product with the same typical ways, so they do the same work without thinking of introducing any improvements or innovation in the production. They lack the technical education which helps them to develop and create new innovation. So we are now before a traditional industry which lacks any development due to the absence of the role of education which conveys talents and opens new vistas of work before both entrepreneurs and employees alike. This is considered a problem which we are going to discuss later among other problems facing SMEs.

#### **4.3.5.4 Number of employees in SMEs**

The field studies show that the employees who are less five per unit represent the highest number of employees working in a single unit in the study region. They reached 54%. The employees from 5 to 10 employees per unit make up 27% of the total SMEs, coming second among the sample. As for the units which take on between 10 and 20 employees per unit came last at a ratio of 19% and this was at the level of all enterprises or enterprises. The biggest ratio of employees in the study area was appeared in the enterprises with employees between 10 and 20 per unit, at a ratio of 43% of all employees in the sample. The enterprises which take on between 5 and 10 employees are ranked second, at a ratio of 29% of employees in the sample. And the enterprises which take on less than five per unit came at the bottom of the list at a rate of 27% of employees in the study area.

Also, the field survey shows that the SMEs units which take on relatively little labour (less than 5 employees) widely exist in the study area and nearly in all activities, except the food and agriculture enterprises. The relatively large SMEs (10 - 20 employees per unit) are ranked first in terms of number

of employees. This prompts us to reconsider the size of the ideal SMEs, and to ask if this ideal size is the one which takes in the most employees or that it is the most widespread enterprise in the geographical area.

However, from the study perspective, the SMEs which absorbs more employees is the nearest to achieving the sustainable development more than the widespread enterprise. Thus, a large SME will have the ability, to some extent, to pay for the required costs to protect the environment and at the same time help more in resolving the problem of unemployment. But we can have the best of the two forms if we adopted clusters and networks system for SMEs. Thus, SMEs easily would work through production lines in a way that distributes the protection costs of the environment to a large number of enterprises. These clusters can be achieved in industrial zones of urban settlements, especially the handicraft enterprises which pose some concern.

#### **4.3.5.5 Problems SMEs face in the study area**

The SMEs suffer from a number of flaws and problems which could restrict their role in the social and manufacturing development. These problems vary and their kinds also vary according to the kind of enterprise. They also vary from one country to another. Now the identification and analysis of the problems in a scientific and field way is one of the vital issues if it will be wanted to set up these enterprises on strong pillars and with potentials which secure stability thereof.

According to a study launched by the UNIDO related to the evaluation of the SMEs in Egypt, the problems which face SMEs should be studied and published. Thus, this will help the government apparatuses, search circles, banks and the guiding centres to provide these SMEs with proper and subjective support to help them stand on their own feet (Arabian Work Organization).

In this context, the field survey identified several problems which obstruct the role of the SMEs in the area of employment in the governorate of Ismailia. The results of the field survey show that both marketing and financing came at the top of problems which the SMEs suffer from in the study area. This was confirmed after a survey was made on some entrepreneurs in the study area as 35% of them said that they face real problems in marketing their products. Also, a ratio not less than 24% of the sample said that they face a problem in the financing process, and that they have not sufficient cash liquidity to finance the entire production process .

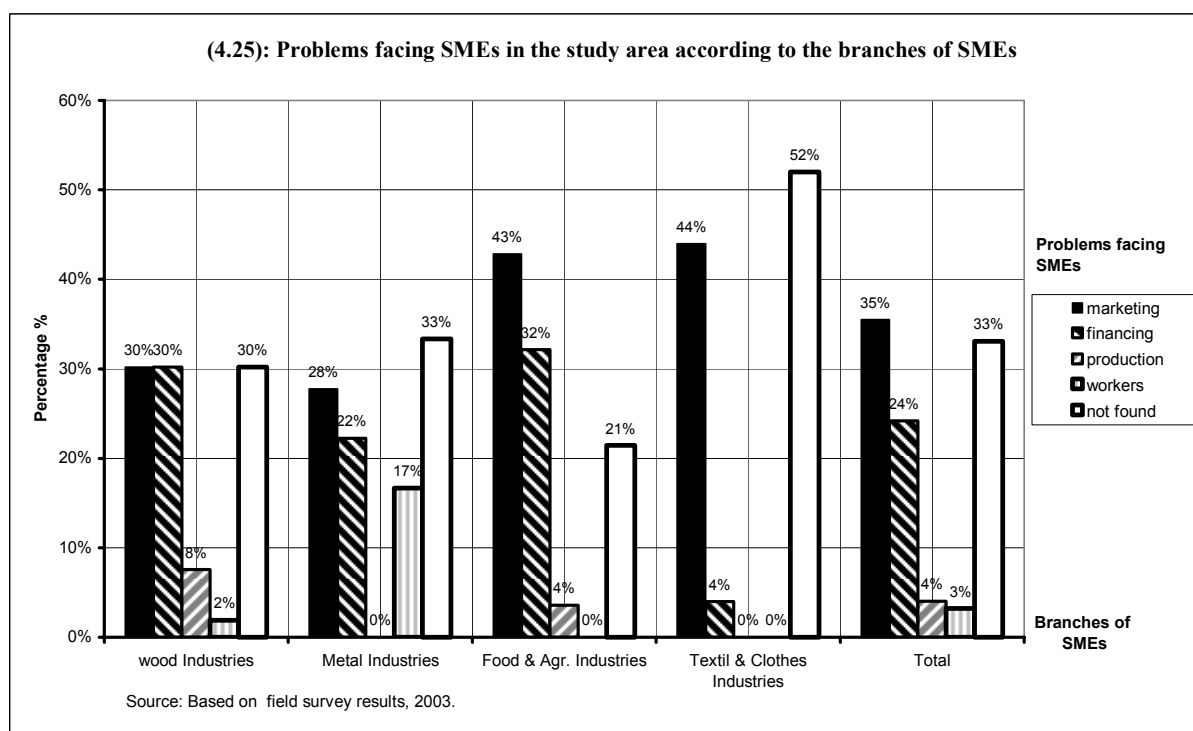
As both marketing and financing are the nerve of the production process, the obstacles facing these two factors or either of them could lead eventually to the ruin of this nascent enterprise itself. Thus, this will lead to the loss of many jobs which, in turn, leads to serious social problems. And in the study area, about 59% of the enterprises face real difficulties in these two factors, which is a very big percentage .

The question now is: In the absence of a government central apparatus, or non-governmental one, or even a mixed, to plan for and supervise such enterprises at the national level or at the level of the governorate of Ismailia, how long these enterprises could withstand the spectre of bankruptcy and closure? Table (4.13) and Fig (4.25) illustrate the distribution of problems which face the SMEs at the study area according to the type of industry.

**Table (4.13): Problems facing SMEs in the study area according to the branches of SMEs**

Branches of SMEs	Marketing		Financing		Production		Employees		Not found	
	No.	%	No.	%	No.	%	No.	%	No.	%
Wood Industries	16	30	16	30	4	8	1	2	16	30
Metal Industries	5	28	4	22	0	0	3	17	6	33
Food & Agr. Industries	12	43	9	32	1	4	0	0	6	21
Textile & Clothes Industries	11	44	1	4	0	0	0	0	13	52
<b>Total</b>	<b>44</b>	<b>35</b>	<b>30</b>	<b>24</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>41</b>	<b>33</b>

Source: Based on field survey results, 2003.



On asking the director of the SMEs in the governorate of Ismailia about the ratio of the SMEs which go bankrupt or face closure, he said that actually there are many SMEs which commenced activity three years ago but now they have gone bankrupt and closed. The reason, from his point of view, is that these enterprises did not adapt themselves with the market, nor did they succeed in marketing their products. They started their activities with depending on loans from the SMEs Fund in the governorate, and actually they made products but they could not succeed in marketing them. This failure forced them to sell these products at far less than their actual cost price, and as a result they could not pay the annual instalment to the SMEs Fund in the governorate or even pay the salaries for their employees. In the end they closed and went bankrupt.

About the number of enterprises which closed the director said that about 30 out of 50 enterprises went bankrupt, i.e. about 60% of the enterprises which commenced activity closed their doors. This is a very big percentage and a bad omen for the future of the SMEs in the governorate of Ismailia. Some of the reasons behind the loss of several SMEs are the absence of an integrated productive system, and the lack of any coordination among these enterprises, through which the people concerned can make a good study of the market and its needs.



What raised more fears is that about 22% of these enterprises work a la carte, i.e. according to previous order. Also, 73% of these enterprises market their products themselves, and that 52% of the latter are facing a problem in the marketing of their products. Moreover, 23% of them suffered from both the problem of financing and marketing at the same time. This conenterprises the possibility of loss of more SMEs in the governorate of Ismailia if these enterprises continue to work individually without any coordination with each other, and without walking on a scientific method for studying the situation of the market.

#### **4.3.6 Summary**

The aim of this topic was to analyze to what extent SMEs are able to play a key role in the area of employment and creation of new job opportunities in the Ismailia Governorate. The study has been shown that SMEs have a major role on employment on the regional level. This can be precisely indicated by the fact that the contribution of SMEs, relative to job creation at both the enterprise and employees levels, reached 97.7% and 40.22%, respectively in Ismailia in 2002. Furthermore, the rate of growth of SMEs in Ismailia governorate - for enterprises, as well as employees, - tremendously exceeds the growth rate of other larger-scale of industries. This growth is directly linked to national economic reforms of the last two decades that have supported and encouraged the expansion of small-scale industries.

These policies started with the totalitarian rule which tended to public ownership until the year 1974, then the shift to the economic open-door policy and encouraging foreign investments with the mid seventies. In the end of eighties till now started the policies of economic reforms including restructuring and economic adaptation, encouraging the individual enterprises initiatives and tending to privatization. This policy has led to thousands of people losing their jobs. Therefore, the SMEs were the solution to absorb these employees. Thus, these small enterprises grew rapidly within the last two decades. But this growth has not been accompanied by a big-picture study including a defined and developed role for SMEs in the Egyptian national economy. One of the most important results discovered in this research, relevant to SMEs on either a national or regional level, was that SMEs have more capability to absorb employees and create new job opportunities than larger industries. However, these enterprises do lack the force to continue; not only these concerns exceed larger industries in the rate of initiation and setup, but they also exceed larger enterprises in the rate of enterprises deceleration and failure. Although it is difficult to prove this at the national or regional level due to the inaccuracy of data available on the SMEs in Egypt, it is a visible reality confirmed by the field studies.

The reason for the inaccuracy of the official data available on the SMEs is the multiplicity of the official bodies issuing these statistics, in addition that the SMEs are not officially registered in the state records. And even the registered ones are subject to several official apparatuses like the Ministry of Industry, the Ministry of Social Insurance, the Social Development Fund, and local councils, etc. The only official apparatus which can give an all-inclusive computation of the SMEs in Egypt is the CAPMAS which does these statistics on the enterprises every ten years. But this computation could include SMEs which did not exist in the previous census. In addition that some SMEs which were included in previous computation had already failed or closed, and as a result they wouldn't be included in the following computation. More, some of these SMEs may have started and closed in a period between the two census periods and thus they were not mentioned in either of the two census periods.

So measuring the growth rate of these SMEs only in terms of employees and enterprises as a mechanism for measuring their ability to provide real job opportunities is rather inaccurate. Also, the high growth rate in employees and enterprises in this sector does not mean that this sector is stable or that it does not suffer from problems. On the contrary, the SMEs in Egypt, in spite of their great role, suffer from structural problems which could lead to the loss of many SMEs and employees periodically. So the watching of this phenomenon requires field studies and researches, which is being followed in this study.

The absence of a well-planned study for supporting and developing the SMEs sector in Egypt prompts the entrepreneurs to get down into similar enterprises. This led to the heated competition between these enterprises and the increase of the supply of their products, which eventually leads to gross losses in such small enterprise and then leads to bankruptcy. It can be noticed this repetition of enterprises in the study area. Thus, the employees and enterprises are concentrated in four kinds only out of 15 ones of these SMEs. These four kinds recorded a greater rate, more than 85% at the level of the employees and enterprises in the governorate of Ismailia. These kinds are: The food and agriculture enterprises, the furniture and wood enterprises, the metal enterprises and the clothes and textile enterprises.

At the level of the study area, it was confirmed that a great number of the SMEs fail due to the repetition and inability to market the products, although the number of the new enterprises is on the increase and so are the job opportunities provided by these enterprises. Hence, the annual growth rate registered about 9% in 2003 at the level of the study area. If this rate continues in this way, the number of enterprises of the SMEs in Ismailia will rise by two folds.

The repetition of enterprises and the inability to market products are not the only reasons for the failure of several SMEs at the study area. However, the researcher was able to watch several related reasons which lead to the same result. This includes the weak role of education in providing the labour market with its needs of skilled and well-trained labour capable of creativity and development. Unfortunately, only 1% of labour and 3% at the level of entrepreneurs have technical qualification. Also, among the reasons for the failure of some enterprises is the absence of any official, organized form, or even an unofficial one, which can assemble these enterprises instead of working individually.

If we look at an indicator in this regard, we will see that 22% of the enterprises in the study region only produce a la carte or according to previous order. Also, the ratio of SMEs marketing their products themselves reached 73% and that no less than 55% of these enterprises have problems in marketing. Besides, 42% of these enterprises suffer from both marketing and financing problems. To sum up, the SMEs at the study area are ones with a high ability to take on labour and create new job opportunities which outnumber the other sizes, but they are not able to continue. In the absence of forms of cooperation among SMEs in the study area, they will not be able to maintain for a long time.

#### **4.4 Way of life and living standard of employees in SMEs**

This part of the study is concerned with testing the ability of SMEs to generate proper incomes for their employees and the resulting effects such incomes have on the social and economic life (i.e., standard of living) of the employees. It will also draw a comparison between the situation in the case study and regional and national averages relative to these social and economic factors. This will provide a means by which to judge the extent of the success of these enterprises in providing “actual”

income for their employees . “Actual” income refers to an income level at which basic needs for goods and services are met, as well as living conditions are fit.

The study will also take into account other aspects of life including: the state and level of educational attained; the condition of housing and associated level of adequateness; the electrical appliances available in the home to the employees and their families; and the overall economic condition of the household finances- that is whether or not disposable income exists, as well as whether or not the potential exists to save money for future needs. Detailed comparisons between SMEs and larger and medium sized enterprises cannot be performed due to the lack of related available information pertaining to these entities. Therefore, comparisons are made relative to living standards between employees from SMEs and approximate averages at the national and regional levels.

#### **4.4.1 The net profits of the enterprises in the study area**

This point was discussed in detail when reviewing the ability of the SMEs to generate the chain of the added value in the region. But it is suitable here to remind of the most significant results reached in this frame. We reached to the net profit made by the enterprise by using the system followed in the Egyptian tax law which deducts from the end product employees wages, the cost of the raw material used along with the operating cost, the rent paid for the place and the depreciation of capital, and was taken into consideration also the family burdens of the employers, also the depreciation of the raw materials used in industry, the cost of transporting the raw materials used, cost of insurance on employees , in addition to the potential risks sustained by the enterprise, the administrative costs and the savings of the enterprise, in addition to the deduction of annual taxes due on the enterprise.

It was shown before on that all enterprises recorded net profits but not all of them secured an added value at the level of the enterprise. As we clarified before, we can classify the SMEs in the study region according to the value of profit achieved in a year, classifying them into four groups: The first group is the one that achieved a relatively low profit less than 6000 LE\*/year. The number of enterprises in this group reaches to 20 ones at a ratio of 19.8% of the total number of the SMEs in the study area. The second group is the one which secured a profit from 6000 to 16000 LE / year. The number of its enterprises reaches 42 ones at a ratio of 41.6% of the total SMEs in the study area.

The third group is the one that secured an annual profit ranging between 16000 until less than 31000 LE and the number of enterprises reaches 31 ones at a ratio of 30.7%. The fourth group is the one that contained only 8 enterprises at a ratio of 7.9% of the enterprises in the study area with an annual profit greater than or equals to 31000 LE. It is to be mentioned that the least profit secured among the enterprises in the study area was estimated at 496.2 LE / year, while the highest profit secured was 44878.7 LE / year. See Table (4.1) and Fig (4.1) which illustrate the classification of enterprises in the study area according to the annual net profit.

As we showed before, achieving little or much net profit does not mean the success of SME. The point here is how much net profit the enterprise achieves in comparison to its invested capital. The minimum profit should be not less than 10% of the invested capital (this percentage is equal the profit value which the invested capital yields if it is deposited in a bank in Egypt). The results show that 15% of enterprises brought in an annual profit less than 10% compared to their invested capital. About 85%

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\* 1 US \$ = 6.18510 LE, in 2003.

of the enterprises achieved an annual profit compared to the invested capital estimated higher than 10%, and the highest profits achieved reached 149%. Table (4.2) and Fig (4.2) show the comparison of the annual net profit with the capital of the enterprise in the study area.

But the disparity between the enterprises in terms of the annual net profit shows the difference between the enterprises in the study area in terms of the degree of organization and administration, as well as the complete awareness of the market conditions. In general, at the level of the enterprise, we can say that the SMEs achieved a good net profit, but the question is now: Is the income which the worker gets in the SMEs suitable for a decent life, and is it a constant and stable income? Is there a social guarantee in of disability or injure at work? This is what we will discuss in the following lines.

#### **4.4.2 SMEs and suitable incomes for their employees**

Employees within the sector of the SMEs in general are divided into three brackets: the first level is the masters and foremen who have great experiences and awareness of the job and mostly the employer is one of the latter. Their number is little or according to the size of the enterprise. This first bracket is characterized by an experience in the stages of the entire manufacturing process. It is they who mostly determine the volume of the raw materials needed for a specific product, and the kind of the raw materials used in the production. This first class in the world of SMEs has the authority to conclude deals with the clients, and the employer depends entirely on such a kind of persons within the enterprise including the distribution of tasks among the employees and technicians.

The second class of employees is the technical worker which is entrusted with specific tasks within the enterprise itself. The third class is the assistant labour, and its main task is to perform the service works within the enterprise like the cleaning operations and offering services to the first and second ranks in the enterprise. It mainly includes children, seasonal labour that work in school vacations or children who dropped out of schools.

The lowest rank of employees is the "third class" employees. It is worth mentioning that the employees of the third class usually receive very simple wages because they are in a period when they acquire the experience of the job itself. It is also worth mentioning that the first class employees are vital and the enterprise can not do without them, while the second and the third class employees are not chief, so in each enterprise there must be at least one first class worker. The larger the enterprise is, the more the number of first class employees is. First class employees are supervising a group of the second and third class employees.

In our study we will review the disparity in the incomes of the employees according the quality of the industry and the skill of the worker himself. We will also discuss the relationship between the incomes proper for the employees and the level of the added value which every enterprise achieves individually. We will evaluate also the relationship between the wages proper for employees and the ratio of employees with social insurance within the enterprise.

Finally we will review the relationship between the added value achieved by an SME and the degree of social insurance for the employees therein. We will take the wages of the first class employees as a reference in these comparisons, because all SMEs have this kind of labour unlike the second and third class employees as mentioned above.

#### 4.4.2.1 The monthly wages of the employees in SMEs at the study area

Table (4.14), (4.15) and (4.16) show the relative distribution of the employees wages in accordance with the type of industry and the skill of the worker. It shows that the first class employees get a monthly salary ranging between 350 LE in the food and agriculture enterprises and 1600 LE in the metal enterprises. The first class employees were classified into three brackets according to their wages: the first class employees with low wages, this is the labour which gets a monthly salary ranging between 350 LE and 818 LE. The number of enterprises which give this monthly salary to the Type of employees reached 26 ones or 26% of the total enterprises in the study area. On top of this group came the food enterprises.

**Table (4.14): Distribution for SMEs according to classes of wages for first class employees and branches of SMEs**

Branches of SMEs	Wages of the first class employees /month						Total
	Less than 818 LE		From 818 -1287 LE		1287 LE and more		
	No.	%	No.	%	No.	%	
<b>Wood Industries</b>	7	18	18	45	15	38	40
<b>Metal Industries</b>	3	18	8	47	6	35	17
<b>Food &amp; Agr. Industries</b>	10	50	10	50	0	0	20
<b>Textile &amp; Clothes Industries</b>	6	25	11	46	7	29	24
<b>Total</b>	26	26	47	47	28	28	101

Source: Based on field survey results, 2003.

**Table (4.15): Distribution for SMEs according to classes of wages for second class employees and branches of SMEs**

Branches of SMEs	Wages of the second class employees						Total
	Less than 531 LE		From 531 -812 LE		812 LE and more		
	No.	%	No.	%	No.	%	
<b>Wood Industries</b>	4	12	22	67	7	21	33
<b>Metal Industries</b>	6	35	11	65	0	0	17
<b>Food &amp; Agr. Industries</b>	14	70	6	30	0	0	20
<b>Textile &amp; Clothes Industries</b>	4	19	11	52	6	29	21
<b>Total</b>	28	31	50	55	13	14	91

Source: Based on field survey results, 2003.

The second category of this type of employees is those who receive between 818 and 1287 LE, with about 47% of the total enterprises in the study area estimated at 101 enterprises. On top of this group also came the food and agriculture enterprises. The third category is those who receive a monthly salary higher than 1287 LE. The number of enterprises which give this salary in the study area is about 28% of the total number of enterprises. The wood industries came at the top of this group.

As for the second class labour in the study region, they receive a monthly salary ranging between 250 and 1000 pounds. This level of labour was also classified into three groups: the first one includes the

second class labour that get low wages ranging between 250 and 531 LE as a monthly salary. SMEs giving this value of wages are forming 31% of the number of enterprises at the study area. The food and agriculture enterprises are topping the list. As for the employees in the second group, they get a monthly salary ranging between 531 and 812 LE. SMEs giving this value of wages are forming the majority of the enterprises surveyed. Thus, the results showed that 55% of the enterprises in the study area pay within this range, on top of which are the wood and furniture enterprises. There remains the third group of labour, and this bracket gets a monthly salary more than 812 LE, and 14 % of the enterprises pay this salary, on top of which are the textile and clothes enterprises. It is to be mentioned that the metal, food and agriculture enterprises did not appear in this group according to the results of the field survey. As shown in Table (4.15).

On the other hand, the third class employees get little wages for the abovementioned reasons. However, the researcher was able to divide SMEs, which have these classes of employees, into three groups. The first group includes the enterprises which are paying a monthly wages to their employees ranging between 90 and 225 LE. This group forms the biggest percentage (58% of SMEs) and on top of this group come the food and agriculture industries. The second group contains SMEs which are paying a monthly wages to their employees ranging between 225 and 360 LE. This group forms 33% of the surveyed enterprises. The textile and clothes industries are ranking first. The third and last group includes enterprises paying more than 360 LE per month to every worker in this category. It forms about 9% of the surveyed SMEs. The wood industries are being on top of the enterprises which pay this salary, as shown in Table (4.16).

**Table (4.16): Distribution for SMEs according to classes of wages for the class employees and branches of SMEs**

Branches of SMEs	wages of the third class employees						Total
	Less than 226 LE		From 225 -360 LE		360 LE and more		
	No.	%	No.	%	No.	%	
<b>Wood Industries</b>	17	57	8	27	5	17	30
<b>Metal Industries</b>	8	50	6	38	2	13	16
<b>Food &amp; Agr. Industries</b>	14	78	4	22	0	0	18
<b>Textile &amp; Clothes Industries</b>	10	48	10	48	1	5	21
<b>Total</b>	49	58	28	33	8	9	85

Source: Based on field survey results, 2003.

On the three levels of employees , about 281 out of the total surveyed employees of 607, or 46%, are paid a monthly salary less than 540 LE or the equivalent of 90 US\$ monthly. According to the poverty line decided by the UN, which is determined by 3 US\$ / day, 46% of the employees in the surveyed SMEs are under the poverty line. It is to be mentioned that 100% of the third class employees, estimated at 393 ones, are paid a salary lower than 3 US\$ per day, as well as 12% of the first class employees. This is a remarkable point especially that the first class employees are supposed to be paid the highest salaries as we mentioned before. In fact the number of employees varies from a enterprise to another and from an enterprise to another.

So if we apply this standard to the number of enterprises which pay a daily wage less than 3 US\$ for the first class employees , we will see this concentrated only in 8 enterprises out of 101 ones. And in applying the same measure, the number of enterprises which give a daily pay less than 3 US\$ for the second class employees reaches 25 enterprises out of 91 ones. As for the third class employees , 100% of enterprises pay for these employees a daily pay less than 3 US\$. If we approved the Egyptian standard of the lower poverty line (US \$ 2 / day), which is used to estimate the number of people unable to afford the cost of essential food and other basic needs requirements, such as education this percentage of SMEs' employees under poverty line in the study area will be decreased to reach 23.3%. And if we take out the non-essential employees (third class employees) from this equation, this percentage will become 6.5% only.

From the abovementioned review of the levels of wages paid to the employees in the surveyed SMEs, we can notice the vast disparity between these wages which depends on the nature of work and the extent of skill it needs, on one hand, and the kind of the industry on the other hand. But, the questions now are: Are these wages sufficient for a decent life, or are they not proportional to the needs of the daily life? Do the employees in the surveyed SMEs feel stability and is there a social guarantee to protect them in case of disability or unemployment, or do they feel instability and fear the future due to the absence of a social insurance? Is the rise of the wages of employees in some enterprises regarded as a necessity to help the enterprise continue only regardless of any positive yield for the SME itself? Or are the SMEs with the highest wages the most profitable ones in terms of the net profit and the added value, thus being the ones with fewer problems in the structure of the production process in the region? This is what we will discuss in the following lines.

#### **4.4.2.2 Relationship between the employees wages and the problems which SMEs suffer from**

The field study shows that the enterprises which pay high wages are the ones with less structural problems related to the production system. It was revealed that only 39% of SMEs giving high wages suffer from structure problems related to production system. These problems are either in marketing their products or in financing or a problem related to the skill of employees themselves, or a problem in the production quality, or they suffer from both the problems of marketing and financing, or marketing, financing and production, or all the abovementioned.

It turned out that 61% of the enterprises which give high wages do not suffer from any problem in the production system at all. Also, 40% of the enterprises giving medium wages do not either suffer from any problem in the production system. This percentage is reduced to 15% with the enterprises giving low wages, as Table (4.17) and Fig (4.26) illustrate. This is ordinary, since the higher wages the more production, a notion which reflects positively on the quality of the production and in turn reflects on the entire enterprise. In other words, the high quality will attract more demand and thus eliminating the problems of marketing and consequently the financing problems will disappear.

However, a percentage not less than 39% of the SMEs in the study area which give high wages suffer from problems in the production system. Of course there are several factors which govern the production system. At the level of the employees, the motive which stimulates them to exert more efforts to improve the production in quantity and quality is not only the rise of wages. From the researcher's point of view there is a third party in the equation: it is stability and social insurance which the enterprise tries to provides for its employees. When the number of the ensured employees is higher, they feel stability and thus motivating them to achieve quantitative and qualitative production,

which in turn achieves a higher added value at the level of the enterprise. This is what is shown in Table 4.17.

**Table (4. 17): The relationship between problems SMEs face and wages levels of employees , results of field survey 2003 – Ismailia governorate in Egypt**

Type of SMEs Problems	Level of wages for employees						Total
	High wages		Middle wages		low wages		
<b>Marketing</b>	5	18%	11	23%	11	42%	27
<b>Finance</b>	3	11%	10	21%	0	0%	13
<b>Marketing + Finance</b>	2	7%	3	6%	7	27%	12
<b>Marketing + Finance + Production</b>	1	4%	1	2%	2	8%	4
<b>Marketing + Finance + Employees</b>	0	0%	0	0%	1	4%	1
<b>Employees</b>	0	0%	2	4%	1	4%	3
<b>Production</b>	0	0%	1	2%	0	0%	1
<b>no problems</b>	17	61%	19	40%	4	15%	40
<b>Total</b>	28	100%	47	100%	26	100%	101

Source: Based on field survey results, 2003.

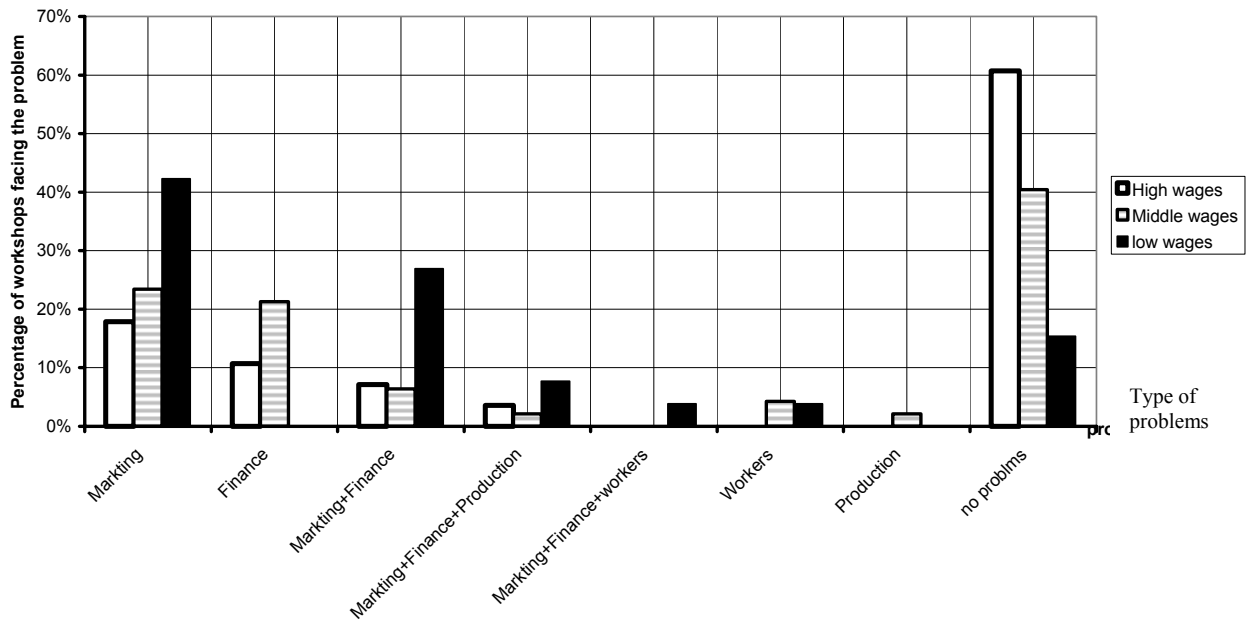
#### **4.4.2.3 Relationship between the social insurance given for employees and the added value of SMEs**

The relationship between the number of employees who are socially ensured and the added value achieved by the enterprise is shown in Fig (4.27). The figures show that the enterprises which granted social insurance to 56% or more of their employees have achieved high and medium added value in 63% of the enterprises which adopted this policy. Only 37% of SMEs in this group have achieved low, and sometimes negative, added value. On the other hand, 57% of SMEs which granted insurance to less than 56% of their employees have achieved big and medium added value, and 43% of these enterprises at least have achieved low and maybe negative added value.

The analysis shows that the difference between the two groups is very little, but this does not mean that the social insurance plays a marginal role in stability and achieving quantitative and qualitative production. Rather, the results achieved by the two groups of enterprises may vary according to the way each group follows in studying the market status including the supply and demand. It is not enough to produce a high quality article but there must be demand on it so that you can market it successfully. The reason for such labyrinth is the absence of a clear development policy for the SMEs sector either at the national level or at the level of the study area, which a strategy for sustainable development has been laid down since 1995, albeit doubts are cast on the seriousness of implementing this strategy.

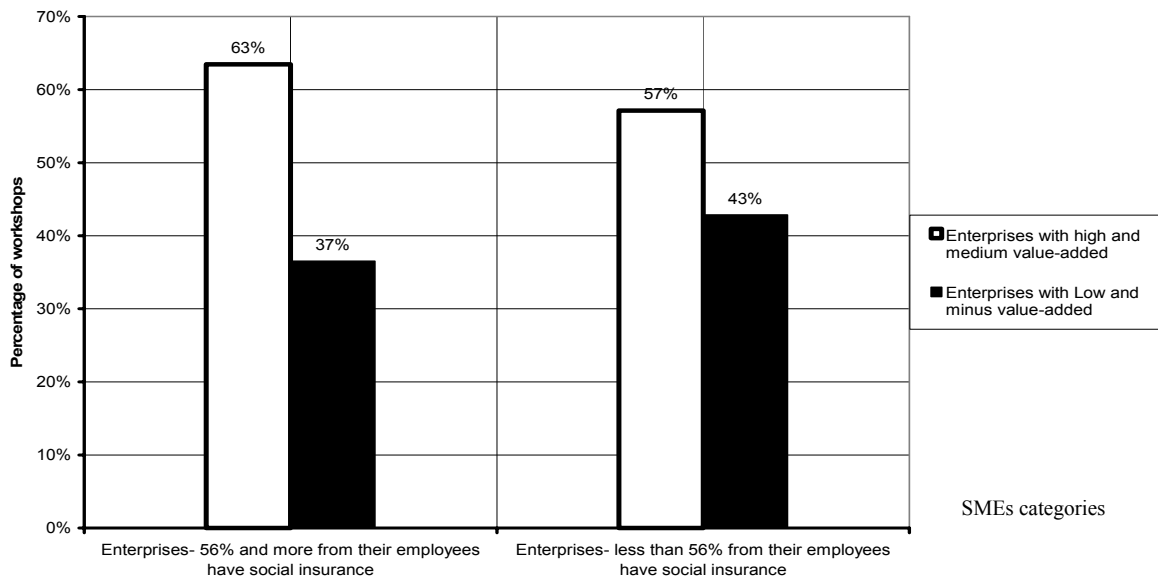


**Fig (4.26): The relation between problems SMEs face in the study area and wages levels of employees**



Source: Based on field survey results, 2003.

**Fig (4.27): The relationship between the percentage of employees who have social insurance and the value added of Enterprise**



Source: Based on field survey results, 2003.

In general, in spite of the absence of a clear policy for supporting and developing the SMEs\* and the scientific and technical consultation which should be provided, the field study proved that there is a correlation between stability and social insurance for the employees on the one hand and the added value achieved by the enterprise on the other hand. The relation is not felt but it exists. The question

\* In this study, the term of workshop means SME

now is: what is the effect which wages have on the employees in the SMEs and their style of life? This is what we will know in the coming lines.

#### **4.4.3 The effect of the SMEs on the way of life of their employees**

This study aims to recognize the effect of incomes on the employees working in the area of SMEs. The research made significant attempts to identify all the other factors which may have an effect thereon. These factors are such as the income the employees earn as a result of working in another activity besides the SMEs, in addition to any earnings he gained during his working abroad for instance. Here it will be discussed social, economic and housing status for employees in SMEs. The following are more details.

##### **4.4.3.1 Social characteristics of employees in SMEs**

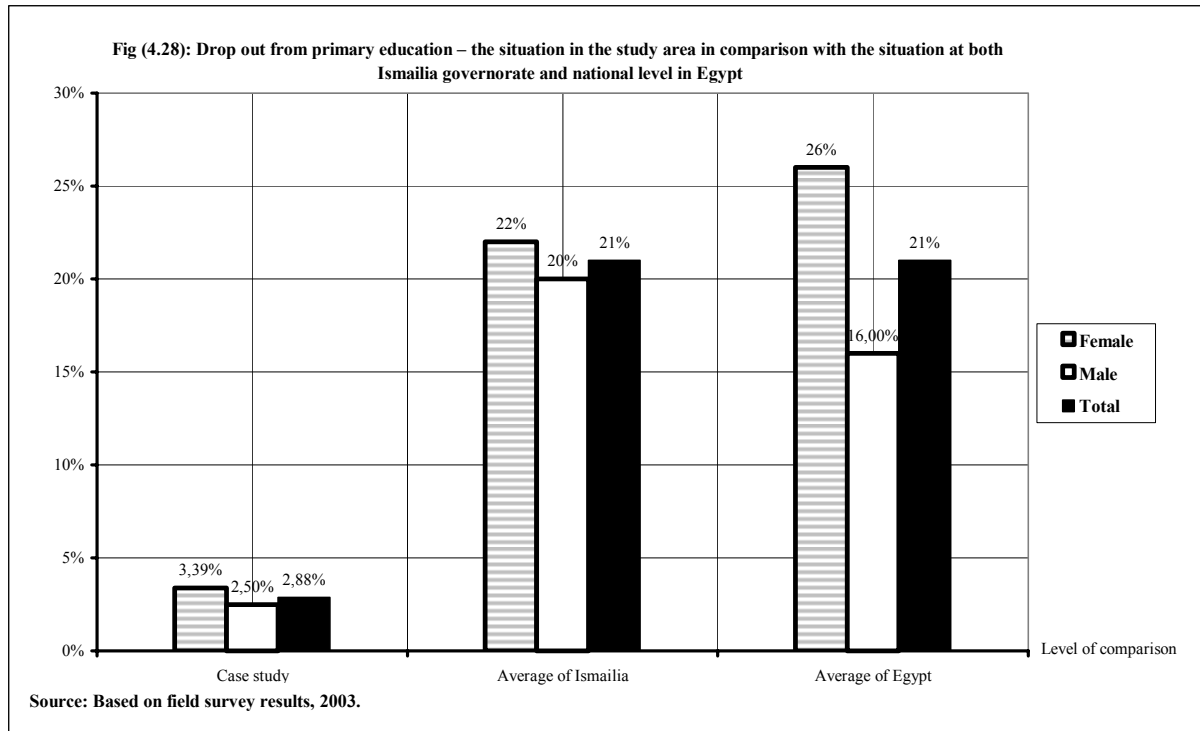
In reviewing the social aspects and characteristics, the focus will be on the factors showing the stability of the social life of employees and their families. We are going to compare these factors with the regional level, represented in the governorate of Ismailia, and the national level. The social factors to be reviewed will be: dropout of the primary schools, the educational status, the migration to the area of study and travelling abroad, as well as the marital status of the employees. The following are the results concluded.

##### **- The phenomenon of dropout in primary education**

Dropout from the primary education is a social phenomenon in Egypt in general and in the poor area in particular where the poor families can not afford to have a decent life. The rise of this rate is an indicator of a social instability. The insufficient income pushes families to send their children to the labour market so that they can assist in raising the family income, even if it is at the expense of education.

The field survey did not record the existence of this phenomenon, since the children of school age reached 139 children, with a little dropout rate which did not exceed 2.9% of the total pupils in the primary stage. This percentage is considered a very small percentage if compared to the rate of dropout at the level of the governorate or at the national level, which reached 21% in the year 2003 at both levels, as shown in Fig (4.28).

It is clear from the figure above that the rate of dropouts in the primary education is higher among females compared to males either at the level of the study area or at the level of the governorate or even at the level of the republic. This due to the social traditions in Egypt inherited from one generation to another, which judges that the natural place of the female is eventually the husband's house. The society regards her as if she is not a party in the process of the scientific economic development in general. So, there is no need for educating her as long as, so they say, she will not benefit the society in any way.



But from the researcher's point of view, the woman is half the society and the society needs both males and females. Simply because the society requires her to raise kids and follow up their progress in education. This requires in turn, that she should have a proper degree of education to qualify her for this mission. Moreover, there are some jobs in the society which need women in particular. Although the ratio of female dropouts at the level of the republic is higher than that of the male, the picture is different in the study area, since there is not a big difference between the female and male dropout from education, as shown in the Fig above.

#### - The status of education within the families of the employees in SMEs

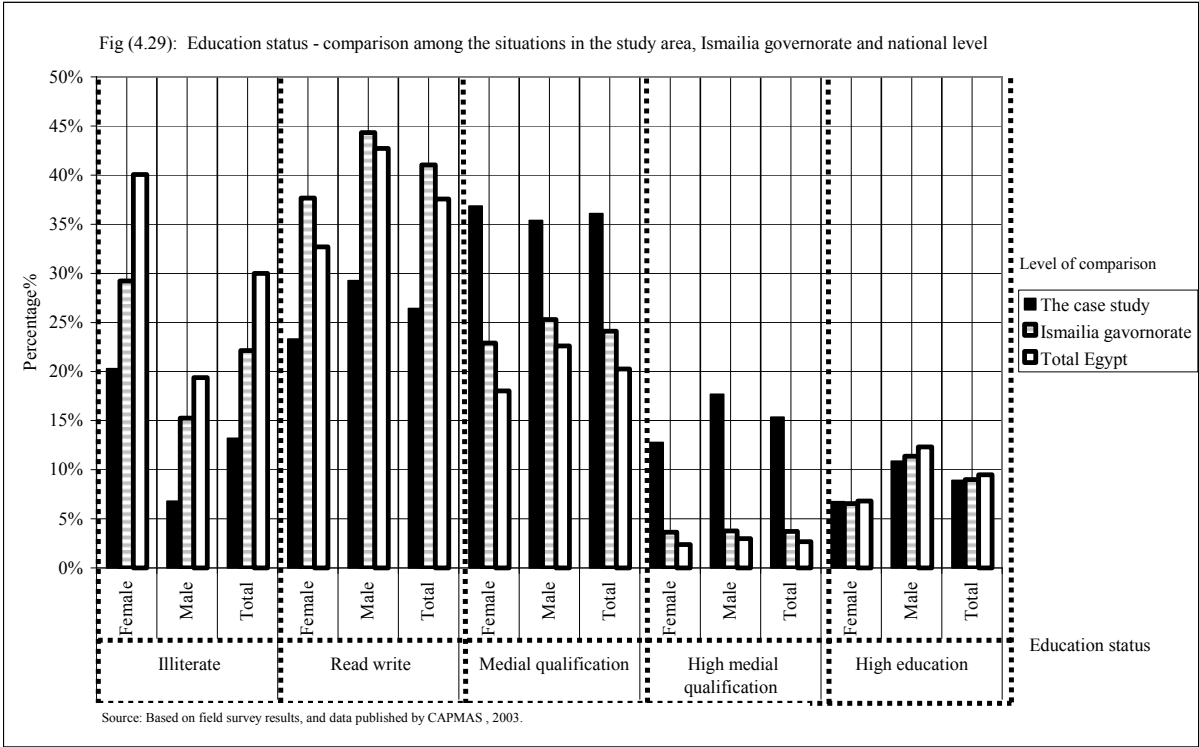
The field study shows that the rate of illiteracy among the families of employees in SMEs is low in comparison to that in the governorate or at the level of the republic. Thus, the illiteracy ratio in the case study did not exceed 13%, while it reached 22% at the level of the governorate, whereas it reached 30% at the national level<sup>34</sup>. It is also noticed throughout the study area or at the level of the governorate or even at the national level that the ratio of illiteracy among females is obviously higher than that of the males. Illiteracy among the females in the study area reached 20%, while it reached only 7% among the males. At the level of the governorate of Ismailia in general, the ratio of illiteracy among females was 39% while among the males did not exceed 15%. At the level of the republic, the ratio of illiteracy among females reached 40% while it stood at 19% among the males. This disparity results from the abovementioned traditions, especially in the rural areas which, until recently, considered the education and work of a girl as faulty and forbidden.

As for the intermediate, vocational education and above, the field study showed that 60 % of the family members of the SMEs' employees have intermediate, upper intermediate or high education. This is considered a big percentage compared to the national level where it reached 33% only. This ratio is higher in the governorate of Ismailia to reach 37%. But it is noticed in the study area that most of the graduates are of the intermediate and upper intermediate education. The intermediate education

<sup>34</sup> Based on data published by CAPMAS for the year 2003.

graduates formed about 36% while the upper intermediate education graduates formed 15%. This is a high ratio compared to its counterpart at the regional and national level where the intermediate and the upper intermediate at the national level reached 20% and 3% respectively, while at the regional level it reached 24% and 4% respectively. In respect of the higher education graduates in the study region, it reached 9%, and this latter is near to its counterpart at regional and national levels.

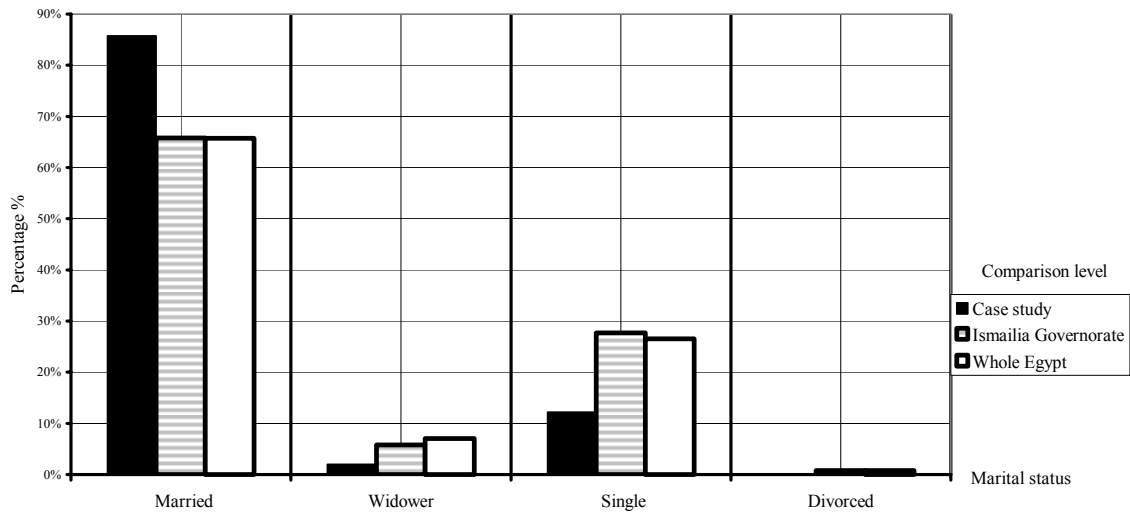
In general, the high ratio of the intermediate and upper intermediate education graduates in the study region refers to stability of the life of employees in the SMEs. It also shows that the incomes they earn are sufficient for the costs of education for their family members. They are not under pressure to push their sons into work to help redress the costs and burdens of life as long as their fathers earn what is sufficient for that purpose. Fig (4.29) compares the status of education within the families of employees in the SMEs at both the regional and national level.



**- The marital status for the employees of the SMEs**

The field study shows that 86% of the employees in the area of SMEs are married, while the single did not exceed 12%, and the rate of widows does not exceed 2%. The field study did not register any divorce among the sample group. If these percentages are compared to their counterparts nationwide, it will be shown that the employees in the SMEs enjoy social stability, since the ratio of the married at the level of the governorate is 65.8% while at the national level it reached 66%. The ratio of the single at the level of the governorate and the republic reached 27.7% and 27% respectively. As for the ratio of the divorcees, it is low either at the regional or the national level, since it does not exceed 1%, while the ratio of widows among the sample group was 2%, while it reached 5.8% at the regional level and 7% at the national level. All of this is shown in the Fig (4.30).

**Fig (4.30): Marital status of the workers of the SMEs in the study area in comparison with Ismailia governorate and whole Egypt, 2003**



Source: Based on field survey results and annual statistics published by CAPMAS, 2003.

The marital status among the study region in particular shows social and economic stability, and this in turn shows that the incomes from the SMEs are enough to start a stable family. However, there may be other sources of income for the employees in the SMEs outside this sector, on top of these sources is working abroad as one of the main factors to make a fortune in the Egyptian society especially in the poor areas. So does this apply to the employees in the SMEs in the study area? This will be highlighted in the following lines.

**- Migration and travelling to work abroad**

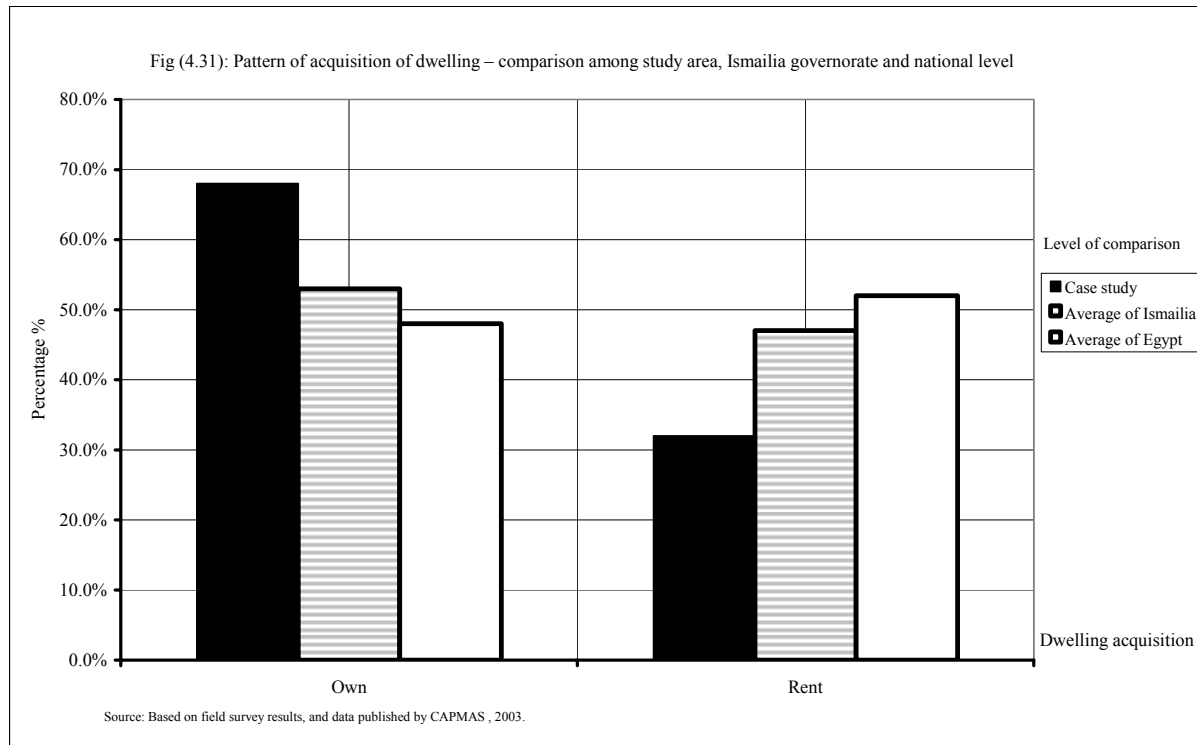
The field study shows that about 71% of the sample is of the townspeople, and that 13% of the sample is employees who migrated to the study area from urban communities within the governorate of Ismailia, while about 16% of the sample migrated to the study area from other governorates. Asked about the motive behind their migration, 83% of the surveyed employees said that they came mainly in search of work, while 17% of them replied that they came in the study region in company with their families. This shows that the SMEs in the study area was a matter of attraction to most migrants either those coming from nearby towns within the governorate or coming from other parts of the country, which counterprises the hypothesis that the SMEs create job opportunities at the regional level.

As for travelling abroad, the field study showed that 9% of the sample have travelled abroad for work, mainly 4 cases in the wood and furniture industries and one case in metal industries, one case of the employees in the textile and clothes industries, and 3 of them worked in the food and agriculture industries. It means that 91% of the employees in the SMEs achieved social and living stability away from travelling, which is a large percentage helps us to judge that the SMEs in the study region are able solely to bring in a constant income for employees which help them to lead a decent life. This will be clearer when studying the urban and economic specifications for the employees in the SMEs.

#### 4.4.3.2 Accommodation characteristics of SMEs' employees

##### - Pattern of acquisition of dwelling

The employees in the SMEs are classified according to the kind of housing to: those who own a home represented 68% of the sample and 32% rent flats. It is worth mentioning that the ratio here is higher than its counterpart at the level of the governorate of Ismailia and at the national level, since it reached 53% and 48% respectively, as shown in the Fig (4.31). It is worth mentioning also that about 7% of the total employees who own flats or houses have worked abroad before. It means that the ownership of a flat comes mostly from work in the area of SMEs in the study area. But the question now is: Are the homes of the employees in the study area suitable for living in terms of the state of the building and the necessary utilities? This will be recognized in the lines below.



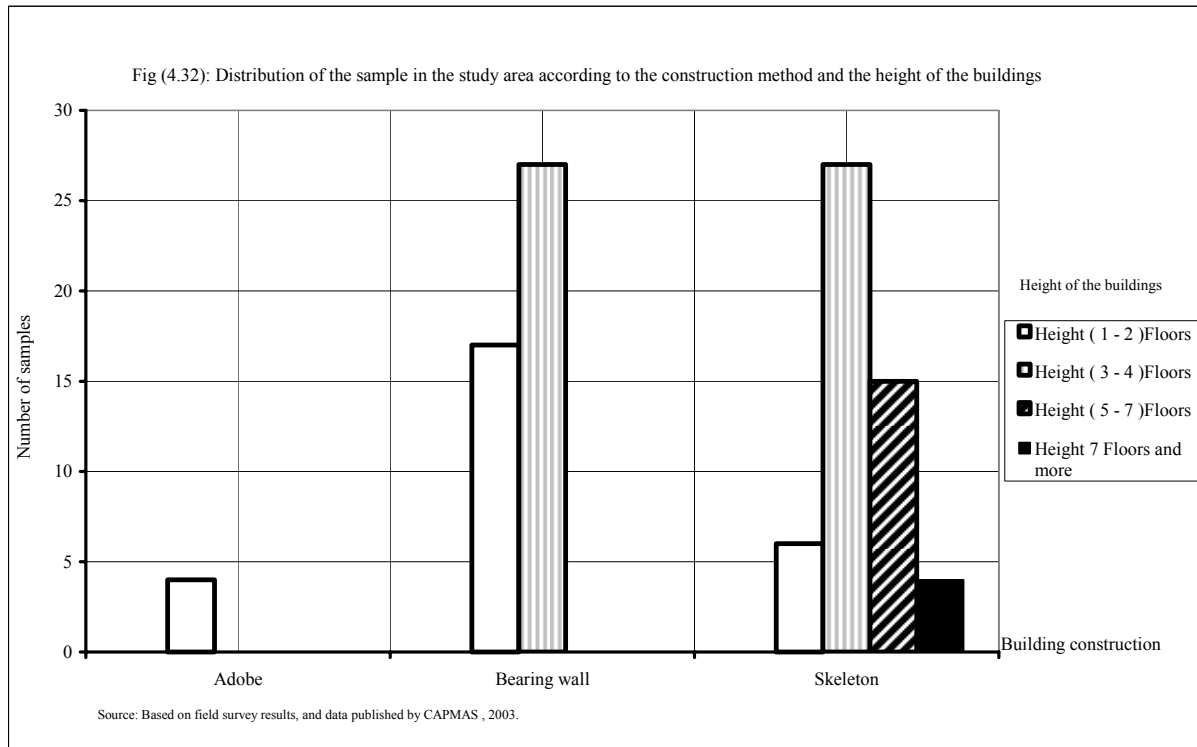
##### - Status of the houses the SMEs' employees are living in

The suitability of the housing can be judged through getting acquainted with the utilities such as potable water, electricity, sanitary drainage and telephone, in addition to the height of the building and the outside appearance of the house. The field study showed that only 4% of these buildings have been built with adobe and wood roofs, which are bad and abundant in the rural areas where such buildings do not stand more than 2 floors no more.

It turned out also that 44% of the houses have been built by use of walls and concrete roofs, which is widespread especially in the popular areas. Such buildings do not stand more than 4 floors, and if more floors are built, they may be dangerous to the state of the building. In the field study, no buildings with load-bearing walls have more than 4 floors, even 39% of the buildings with load-bearing walls in the study area range between 1-2 floors, while 61% of the study area ranges between 3 to 4 floors.

The majority of the buildings housing employees in the SMEs are structure buildings. They can stand more floors according to the design of them. This ratio amounts to 52% of the total cases. 12% of the construction buildings are built on one to three floors, while 52% of them range between 3 and 4

floors. The 5-7-floor form 29% of the sample, while the buildings higher than 7 floors do not exceed 8%, as shown in the Fig (5.32).



Concerning the connection of the buildings with the public utilities, the field study showed that 92% at least are connected with the water network, while those unconnected do not exceed 8%. But this percentage is considered good in comparison with the general ratio at the level of the republic or the governorate where it does not exceed 85%. As for the connection of buildings to the sanitary drainage network, the field study showed that 81% of the sample group is connected therewith, while about 19 % of the buildings in the study area are not connected so they use primitive means to get rid of this sewage, which is a chance for diseases and epidemics. However, the situation is better than that at the regional or the national level, where only 45% of the buildings are connected to the sanitary drainage network.

Concerning electricity, 100% of the buildings are connected to the electricity networks, compared to 97% at the regional level and 95% at the national one. In general, electricity in Egypt is no longer a problem but the actual problem lies in the sudden electricity short especially in the poor rural areas. But no one of the employees in the study area confirmed the existence of this phenomenon in the region. On whether the buildings are connected with telephone networks, the study shows that no less than 64% of the buildings are connected with telephone networks, a big percentage if compared to the general one which does not exceed 42% at the level of the governorate and 32% at the level of the republic. In general, the buildings in bad state in the study area does not exceed 13% in terms of the structure and connection with the public utilities, while 35% of the sample reside in middle class buildings connected with public utilities. The great majority of employees in the SMEs (52%) reside in buildings with good condition in terms of construction and public utilities.

#### **4.4.3.3 Economic characteristics of SMEs' employees**

##### **- The ownership of transportation means**

The ownership of means of transport in Egypt often reflects the social and economic status. In this respect, the field study proved that no less than 18% of the employees in SMEs own private cars, and no less than 35% of them own motorbikes, while no less than 47% of the surveyed people do not own any means of transport. This percentage is better than its counterpart at the regional and national level. Thus, at the level of Ismailia governorate only 10 % of the families own cars, while it is 8% at the national level. Similarly, 24% of the families in Ismailia own motorbikes while it is 8% at the national level. As for the families, who do not have any transport facilities; constitute 66% of the total families in the governorate of Ismailia. This percentage at the level of the republic is about 84%.

At any rate, the status of the employees and their families in the study area in terms of owning vehicles is better than their counterparts at the national and regional level, at least from the economic perspective. But from the environmental perspective, some means of transport have bad effects on the environment and against the notion of sustainable development. Even though it indicates at the same time the rise in standard of living of the employees in the SMEs in comparison to the general average on the regional and national level.

##### **- The ownership of electrical appliances**

The ownership of electrical and technological appliances also reflects the economic position, i.e. the more gadgets you have, the higher standard of living you lead. The study showed that 100% of the sample group own washing machines, with 74% of them owning ordinary washing machines, 6% own half automatic machines, while those who own full automatic ones do not exceed 20%. It is worth mentioning that 85.2% of the families in Ismailia own washing machines, reduced to 75.3% at the national level. 98% of the employees in SMEs own fridges, reduced to 73.6% at the level of the governorate, further reduced to be 57.4% at the national level.

On the ownership of a cooker, 98% of the sample group in the surveyed area own cookers, while 80.1% of the families in the governorate own cookers, reduced to 64% at the national level. 100% of the sample group own television, but 20% of them own a black-and-white television while 80% of the sample group own colour television. At the level of the governorate of Ismailia, 50.6% of the families own colour television, reduced to 39.8% at the national level. As for the video, no less than 32% of the employees in the study region own videos, a big percentage if compared to its counterpart at the regional level which reaches 6.4% only, reduced to 5.6% at the national level.

On the ownership of heaters, it does not exceed 19% among the employees while those owning the heaters at the regional level reach 27.7% and 20.7% at the national level. This is attributed to the rise of the number of those who own air conditioners at the regional and national level, since it amounts to 16% in the study area while it amounts to 0.8% at the regional level. This ratio, however, rises at the national level to reach 1.3%. On those who own satellite, it reached 24% among the employees in SMEs while it is 5% at the regional and national level.

On means of communication like the ordinary telephone, 62% of the sample owns it, while this percentage is reduced at the level of the governorate to be 42%, further reduced to be 32% at the national level. As for mobile phones, it turned out that 34% of the sample own them while the percentage is reduced at the level of the governorate to be 20% and 14% at the national level.



**- The rate of spending, the monthly salary and capability to save money**

The monthly income in Egypt is one of the criteria that reflect the standard of living. Often the people in general and the cases in the study area in particular fear to mention the real monthly salary in a direct way for fear of using this information in a way that harms the family. Only a few percentage of people give the real monthly salary after they make sure that they will be used in scientific researches. So the researcher resorted to different means to help him know the level of income, like asking the sample on the means of transport or the household appliances, or the monthly rate of spending in the family, and eventually the direct question on the monthly income. At this the surveyed employees decline to state this and instead give you an approximate sum of money, through which we can get the nearest information to reality.

Before that, we could know the salaries the employees receive from the owners of enterprises, but the point is to know the rate of the monthly spending of the families of employees against the earnings they get throughout the month. In this way, we can recognize how far these employees are able to save from the salaries they get. The capability to save money is the real criteria of the social welfare. The more ability to save, the more decent life the one leads.

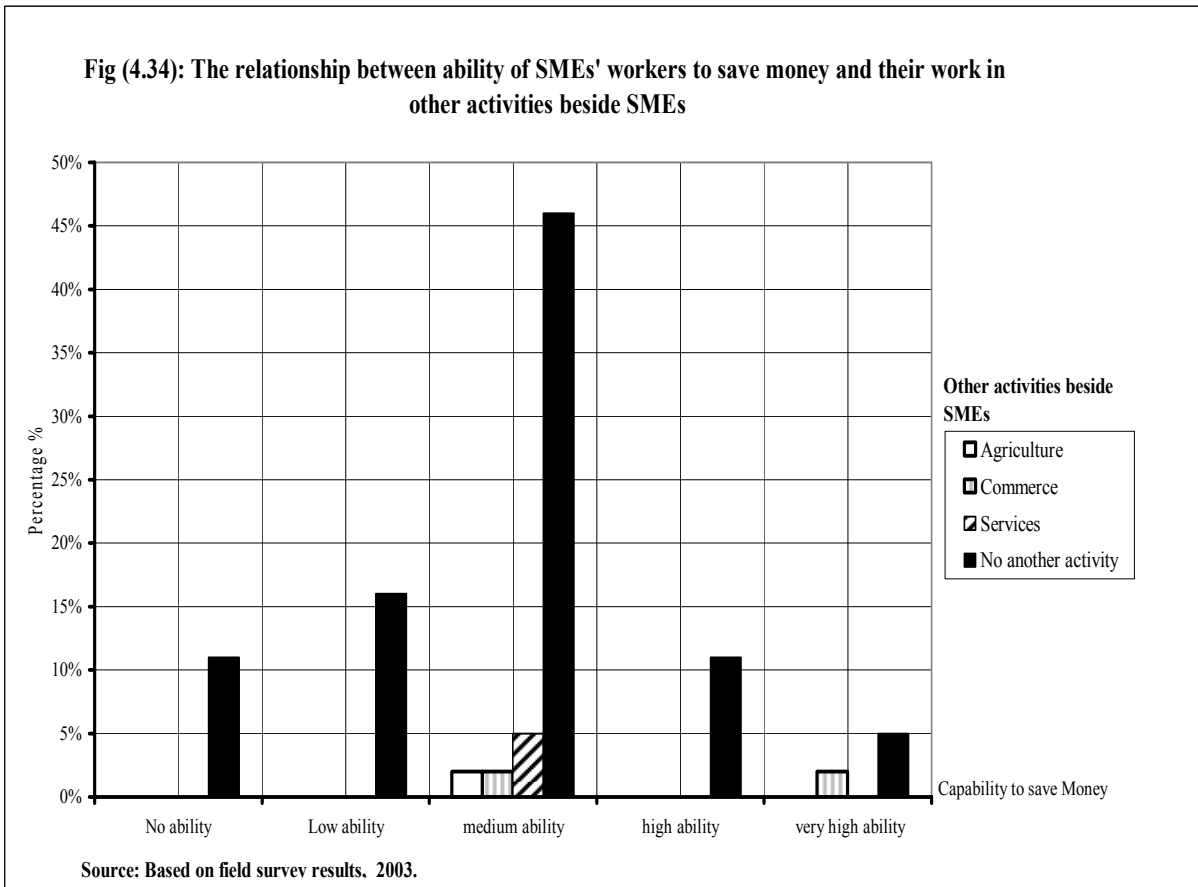
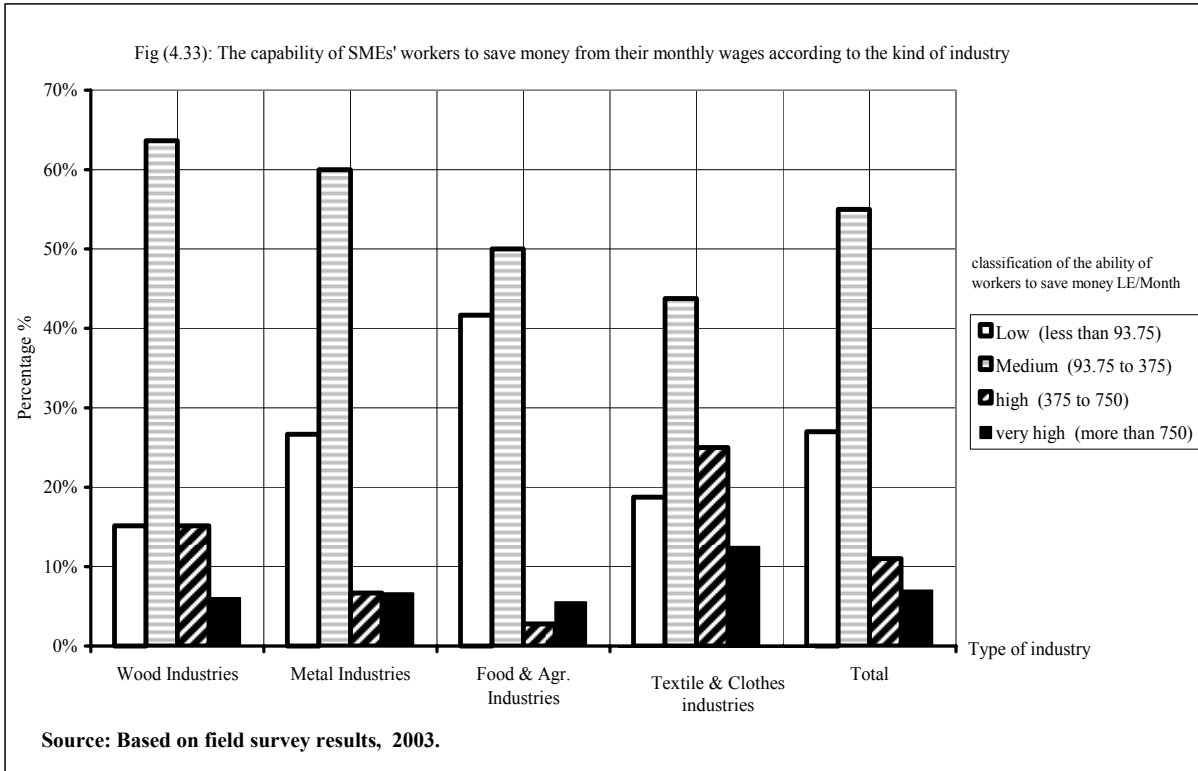
In this context, the field study was able to conclude that 27% of the employees surveyed have no capability to save or their savings are meagre (less than 93.75 LE per month). About 55% of the surveyed have a medium capacity to save( 93.75 to 375 LE monthly ) and that no less than 11% of the sample have high leverage to save( 375 to 750 LE monthly ) while 7% have a very high capability to save ( more than 750 LE per month ). However, the field study concluded that no less than 89% of the sample has capacities to save but with different levels, while 11% of them proved to be unable to save due to the disparity between the spending of the family and the income, as shown in the Fig (4.33).

The high standard of living among the sample group in the study area may be attributed to the existence of another additional job besides the SMEs. So, the researcher made sure of this and concluded that 11% of the surveyed people have an additional job besides the SMEs, i.e. 89% of them have no job other than working in SMEs, which is a very big percentage. This means that the majority of the surveyed employees have no incomes sources except their working in SMEs, as shown in Table (4.18) and Fig(4.34).

**Table (4.18): The relationship between capability of SMEs' employees to save money and their work in other activities beside SMEs**

Ability to save Money	No Ability		Low ability		Medium Ability		high Ability		very high Ability		total
	No.	%	No.	%	No.	%	No.	%	No.	%	
<b>Work in other activity beside SMEs</b>											
<b>Agriculture</b>	0	0	0	0	2	2	0	0	0	0	2
<b>Commerce</b>	0	0	0	0	2	2	0	0	2	2	4
<b>Services</b>	0	0	0	0	5	5	0	0	0	0	5
<b>No another activity</b>	11	11	16	16	46	46	11	11	5	5	89
<b>Total</b>	11	11	16	16	55	55	11	11	7	7	100

Source: Based on field survey results, 2003.



The previous Table and Figure illustrate that all the sample group who have no, low or high capability to save money, all of them have no other job than their work in the SMEs. The study registered that 55 cases have medium capacity to save money; only 9 cases out of them have another job beside their work in SMEs. These 9 cases are distributed as (5 in social services, 2 in commerce and 2 in agricultural sectors). The study also showed that 7 cases have a very high capability to save money; only 2 cases out of them have another job in commerce beside their work in SMEs. This shows that the exercising of other activities did not play a significant role in bettering the level of the income for the sample group. Their incomes from the SMEs have had the greatest role in bettering their standard of living and changing the style of their lives to the better if compared to the situation at the regional or national level.

#### **4.4.4 Summary**

The aim of this topic was to test the ability of SMEs in the study area to generate suitable incomes at the enterprise and employees level, and to what extent is these incomes impacted the employees' life style.

SMEs in the study area were found to be to provide suitable incomes for a large percentage of the enterprises, themselves, as well as for their respective employees. A total of 85% of SMEs in the study area have achieved a positive added value that annually exceeded 10% of the capital invested. The research indicated that SMEs in the study were able to create three levels of jobs with suitable incomes for most of their employees relative to social, residential and economic standards of living. The first and second levels consisted of jobs at a basic level. However, the third level was comprised of jobs at an assistant level. In spite of this fact, more than 46% of the employees of SMEs generally live below the poverty line (by the U.S. \$3 per day standard). If the assistant labour positions were removed from this formula, this ratio would be decreased to only 25%. According to the Egyptian standard for the lower poverty limit (i.e., in U.S. dollars, \$2 per day), that is used to estimate the number of people unable to afford the cost of essential food and other basic needs such as education, only 6.5% of the essential employees (first- and second-class employees) in the study area would fall below the poverty line. This would be considered to be a very good percentage by comparison to that of the entire country whereby 20% of people live below the poverty line.

Moreover, it has been indicated that there is an inverse relationship between the employees' wages and the problems SMEs face. In addition, it was found that a direct relationship exists between social insurance for the labourers and the added value for the enterprise. Enterprises that provide social insurance for 56% or more of their labourers, have achieved an added value higher than those enterprises that provide social insurance for less than 56% of their employees.

Research has proven that the impact of the SMEs in the study area on the labourers' life style is positive as employees enjoy very satisfactory levels of secure, stable social and economic standards. This can be illustrated by comparing the percentages of children lacking education, illiteracy rates, levels of education (i.e., those having received education at the intermediate level) and marriage rates. In each instance, figures for employees within SMEs were compared to those of the Ismailia region and the nation, overall. The percentage of children lacking education within the households of SMEs' employees was smaller (2.9%) by comparison to the percentages for the nation or the Ismailia region (21%). The illiteracy ratio in the case study did not exceed 13%, while it was 22% and 30% at the regional and notional levels respectively. Furthermore, there is an increase in the number of employees and their family members with an intermediate education compared with those figures of the Ismailia

governorate or in Egypt. Thus, this percentage reached 60% in the case study, while it did not exceed 37% and 32% at the regional and national levels respectively.

By Egyptian standards marriage status is a good indicator for social and economic life stability. It was indicated that, there is an increase in the ratio of married between SMEs' employees in the study area (86%) than the general average in Ismailia governorate (65.8%) or general average in Egypt (66%). The high percentage of married SMEs' employees in the study area emphasizes the fact that the incomes provided by the SMEs are sufficiently adequate for establishing a secure family future.

The vast majority of the immigrants (83%) in the study sample were seeking good job opportunities; this ultimately emphasizes the fact that SMEs in the study area have stimulated forces by which to attract employees from a broad geographic area. In broad terms, SMEs have proven their vital role in creating suitable job opportunities in the region. Furthermore, these overall social indicators illustrate the capability of SMEs to provide suitable incomes to secure a satisfactory standard of living that can provide for education expenses for all members of a family. Therefore, older children are no longer expected to leave school in order to work and help support the family.

The wages SMEs are able to pay their employees have enabled about 68% of the labourers to own their own residential dwelling units. Certainly, this is a relatively high percentage when compared with the overall average percentages in Egypt or Ismailia which do not exceed 50% in either case. Furthermore, this study also indicated that a high percentage of employees' housing units within the study area are connected to primary services including water supply, electricity, drainage and sewage systems, as well as telephone networks. In addition, only a small percentage of the labourers in the sample group, not more than 13%, live in very poor conditions; 35% living in fair housing conditions; while the majority of employees (52%) from within SMEs live in better conditions relative to building conditions and utility connections. This further verifies the main concept of sustainable development that aims to provide adequate shelter for all.

However, the indicators of economical stability, which distinguishes the employees in SMEs in study area, were represented in that not less than 53% of the sample group has private transportation means like a car or motorcycle or usual bicycle. This ratio at Ismailia governorate level did not exceed 34%. However, this rate at the national level is 16% only.

It is also clear through this study that a great ratio (98%) of the employees in the study have the basic requirements of house apparatus such as: (washer- Refrigerator - Stove- television). This ratio decreased to 73.6% in Ismailia governorate. Furthermore, it is more decreased on the national level to reach 57.4%.

The field survey registered some luxurious articles in study area, which are considered in Egyptian society as not necessary articles such as: video recorders - satellite dishes- air conditioners - heaters - telephones and mobiles. These were available in the following rates (32%, 24%, 35%, 62%, and 32%) in order. However, these ratios were on Ismailia level (6.4%, 0.5%, 28.5%, 42%, and 20%) in order. While at the national level, they were as (5.6%, 0.5%, 22%, 32%, and 14%).

Regarding the ability to save money, which is considered the actual measure of social welfare, it is cleared out through this study that only 11% of sample group are not able to save money, while 89% of sample have the ability which varies between low ability (less than 93.75 LE monthly) to very high

ability (more than 750 LE monthly). It is cleared that 11% only of the sample have other activities which they practice beside their SMEs activity to improve their incomes.

In summary, it is clearly evident that SMEs in the study area have succeeded in providing a satisfactory standard of living along with suitable incomes for the majority of their employees. This is clearly demonstrated in their housing, social and economic life patterns as compared to the average situation at the national and regional levels in Egypt. Nevertheless, there are many obstacles hindering the survival of small industries in the region, not the least of which is the lack of oversight and direction from a national scale. Either an official or non-official organization needs to be formed to begin to provide policies and coordination between existing enterprises and programs, as well as to emphasize the role SMEs play in the acceleration of economic development.

Furthermore, this entity needs to be responsible for the formulation of regional plans for these industries that, in turn, can be integrated into the nation's economic plans for growth and development. This will lead to increased integration and coordination between all of these enterprises; an increased standard of added value; improved levels of social insurance provided to employees ; as well as increased capabilities for competition between these small-scale industries with larger-scale enterprises in regional and national markets.

#### **4.5 Conclusion and results of the chapter**

The aim of this chapter was to prove the first hypothesis which stated that SMEs have, in principle, a positive effect on the economic and social development of a region by initiating regional and national chains of economic value-added and related job opportunities with good incomes on a regional scale. Three issues in this chapter were discussed to verify this hypothesis. The first issue was related to the ability of these SMEs to boost the chain of economic added value within the region. The second issue was related to the ability of SMEs to provide job opportunities at the regional level. The third issue pertained to the ability of the SMEs to generate a competitive level of production in order to provide appropriate income levels for their employees, thus, enabling SMEs to compete with local and national large scale enterprises.

One of the most important outcomes regarding the first issue was that SMEs already have the ability to achieve added value at the enterprise level. This was realized by 85% of the SMEs in the study area. However, their ability to move the economic chain of added value in the region has not been realized until now. This has been due to the fact that each SME in target area works alone as there is no form of cooperation between SMEs or groups. Such matters require that each SME should perform most of the roles in the production process. This results in weakening these enterprises and adding burdens to them. In spite of this fact, a large ratio of such enterprises in the target area has been successful up to now in performing these roles. Otherwise, from a research point of view, these will not be able to be sustained for a long period of time due to this burden that they bear.

The best evidence to substantiate this is that the production of a ratio of not less than 22% of the study sample depended on prior agreements with the client. This means that without prior agreements, there was no production. This is known as temporary unemployment or a temporary freeze of activity. This freeze may have lasted for a few days; however, it sometimes may have lasted for an entire month in some enterprises. Also, not less than 73% of study sample is attempting to market its products on their own; this matter only increased the difficulties these small enterprises face.

From the research view, the effect of SMEs would have been more efficient in the field of activating the chain of economic added value on the regional level in the presence of a clear strategy to cluster like enterprises according to their craft. This would have helped to facilitate the enterprise of specified programs and market studies for these entities. It would then be easier to specify the needs of these enterprises and their related production requirements so that specific mechanisms for marketing could be put into place.

Regarding the ability of SMEs to provide suitable job opportunities, it has been shown that SMEs have a major role on employment on the regional level. However, the growth of SMEs in Egypt has generally been linked with economic reforms introduced by the state in the last two decades. This policy has led to thousands of people losing their jobs. Therefore, the SMEs were the solution to absorb these employees. Thus, these small enterprises grew rapidly within the last two decades. But this growth has not been accompanied by a big-picture study including a defined and developed role for SMEs in the Egyptian national economy. One of the most important results discovered in this research, relevant to SMEs on either a national or regional level, was that SMEs have more capability to absorb employees and create new job opportunities than larger industries. However, these enterprises do lack the force to continue; not only have these concerns exceed larger industries in the

rate of initiation and setup, but they also have exceeded larger enterprises in the rate of enterprises deceleration and failure

SMEs in the study area were found to be able to create three levels of jobs with suitable incomes for most of their employees relative to social, residential and economic standards of living. The first and second levels consisted of jobs at a basic level. However, the third level was comprised of jobs at an assistant level. The income earned by about 46% of the SMEs' employees was generally less than the poverty limit (U.S. \$3 per day). If the assistant labour positions were removed from this formula, this ratio would be decreased to only 25%. However, according to the Egyptian standard for the lower poverty limit (i.e., in U.S. dollars, \$2 per day), that is used to estimate the number of people unable to afford the cost of essential food and other basic needs such as education, only 6.5% of the essential employees (first- and second-class employees ) in the study area would fall below the poverty line. This would be considered to be a very good percentage by comparison to that of the entire country whereby 20% of people live below the poverty line.

This study also showed that there was an inverse relationship between the problems facing SMEs in the study sample and the employees' wages. Furthermore, there was a direct relationship between the added value of the enterprise and the levels of social insurance for the employees . Generally, it can be said that SMEs have already succeeded in providing suitable incomes for their employees; this was reflected clearly in their residential, economic and social status compared with these same factors on the regional and national levels. However, there are many concerns over the ability of SMEs in the area to provide actual long-term stability for their employees in light of the decrease of social insurance provided and the lack of a strong role by official or unofficial "systems" whose purpose it is to organize these enterprises and activate their role in the national economy.

## **Chapter 5: Constraints regarding the SMEs contribution to sustainable regional development**

### **5.1 Introduction**

Currently, SMEs are forced to cope with a whole nexus of problematic challenges related to changing conditions in the international market. These challenges include increasingly liberalized trade, a changeable, geographically expanding enterprises environment, and increasingly stiff competition at home and abroad. Regulations of the twenty-first century competition (“new competition”) are now increasingly dependent on flexible structures, flexible specialization, and flexible production processes. These are governed by product-led, instead of price-led, competition, just-in-time principles, and sustained innovation and innovative technologies of production involving knowledge-intensive activities. This approach includes design, quality control, and new management methods based on teamwork organization, with the benefit of good working conditions, and a cooperative inter-firm infrastructure (Nadvi 1995).

If SMEs\* in the region do not want to be marginalized and if they are to become more competitive through the attainment of greater efficiencies in production, they must adapt to the new requirements of the market. They should also acquire the skills and knowledge which they need to introduce innovative changes to their products and processes. They must reform their operations (namely, create leaner structures), upgrade their technology, improve working conditions and charge affordable, competitive prices (ESCWA 2001). If SMEs are to sustain their competitiveness in a global economy, these new rules must be assimilated as part of a continual process of change, rather than a chain of end-states.

The problem with most SMEs in developing countries, especially in Egypt, involves the fact that they channel most of their energies into maintaining their narrow profit margins due to a lack of resources with which to face the challenges of globalization. The problems of SMEs are commonly attributed to their small size. SMEs often fail to remain sufficiently flexible to keep pace with new developments or to address major obstacles so as to be competitive. They also fail to work through clusters or networks. As a result, they rarely attain the dynamic competitiveness which needs to be within their grasp .

A growing body of evidence in developed, as well as developing countries, suggests that the problems faced by SMEs lie not in their size, but, rather, in their institutional isolation. However, in the context of the changing conditions of competition in the international market, clusters of SMEs are far from being handicapped by size. They enjoy the advantages of flexibility and responsiveness and can, therefore, be more competitive than larger enterprises.

SMEs often lack the time, information and funds to evaluate their activities, to set targets and, thus, to continuously contribute to the progress (i.e., economically, socially and environmentally) of products and services. Existing international environmental management schemes are often too complex for SMEs to handle. They need more pragmatic assistance. A variety of information gatekeepers have to work together in order to increase awareness among SMEs for environmentally and socially sound production patterns (Kuhndt and von Geiber 2002).

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\* In this dissertation the abbreviation SMEs is used in different ways according to the specific context. In chapter 1, 2, 3 the term refers to small and medium enterprises in general, whereas in chapter 4, 5, 6, 7 the term is used as abbreviation for small manufacturing enterprises of which most are micro enterprises.



Most SMEs perceive environmental improvement as a costly burden. Principally, they are concerned with short-term economic survival. Usually they do not have any motivation to ask for or to use environmental information or technical support. In addition, SMEs often do not have staff with sufficient environmental knowledge and expertise to be able to address problems and opportunities in the environmental field. Existing international environmental management schemes are often too complex for them to handle. Once an SME has started to implement an environmental management scheme, the process is frequently found to be unexpectedly expensive and is, therefore, often interrupted (Hillary 1999).

In general, there are problems which the SMEs face that present stumbling blocks on their path toward rapid progress to cope with local and international market requirements. These problems, however, vary from one industry to another and from one country to another. Albeit, these problems have something in common; mainly, they are limited the contribution of SMEs in sustainable regional development. So, diagnosis of a problem is considered the first stage of remedy. Field studies are the most important tool used to reach an accurate diagnosis of the problems facing SMEs of which this study has focused.

This chapter aims to deal with the second hypothesis in this thesis which says that "the effect of different types and sizes of SMEs on regional sustainable development is limited for the time being," and this is attributed to three sub-hypotheses: **First**, the limited invested capital in the SMEs, as well as the instability of supply and demand, not to mention the high market risks which greatly restrict development in the long-run. To verify this hypothesis, some indicators related, first and foremost to the economic obstructions facing the SMEs, will be tested. **Second**: The SMEs provide job opportunities for people who are not sufficiently qualified for other positions; however, SMEs do not provide adequate social guarantees or manufacturing safety measures for their employees. To verify this hypothesis, some indicators will be chosen which are related to the social obstructions facing SMEs. **Third**: The production processes of SMEs lead to high environmental risks due to the absence of ecological awareness clearly apparent from the inappropriate use of raw materials and energy, as well as the absence of production control mechanisms. To test this hypothesis, some indicators related to the environmental obstacles which SMEs in Egypt face will be selected.

## **5.2 Economic constraints SMEs face towards sustainability**

Economic development is, in general, one of the main pillars of sustainable development of any enterprise. The presence of any disorder in the economic system will reflect negatively on the capability of an enterprise to maintain and to achieve its future development aims. However, this economic system is based on a group of means and instruments which are the basis of any economic structure. The stronger the basis of the structure, the stronger the structure is. This, in turn, will enable an enterprise to cope with international challenges and changes. The recognition of problems from which SMEs suffer is the first stage to addressing and solving these problems. This is precisely what this study will highlight, the economic problems and obstructions within SMEs in the governorate of Ismailia as a case study in Egypt. This study examines the relationship between the limited capital within the SMEs and their long-run potential development by taking into account the various industry types and sizes.

### **5.2.1 The effects of invested capital upon SMEs sustainability**

The capital in the SMEs is one of the most influential factors of their growth and maintenance as well as achieving the sought for targets. The capital in general is divided into:

1- Fixed capital, i.e. the basic assets of the enterprise such as buildings, facilities, machinery and equipment, let alone the land on which the enterprise is set up. It is worth mentioning that the fixed capital undergoes annual depreciation varying with the kind of capital and the environment where it is invested. For example, in Egypt in general, the rate of annual depreciation of furniture and equipment reaches 10% of the total capital, while the annual depreciation of buildings and facilities reaches 2%.

2- Operating capital, i.e. the cash liquidity of the enterprise which enables the latter to bear the cost production requirements such as raw materials, operating costs and employee's wages. The more sufficient the operating capital is to bear the costs aforementioned, the fewer risks face the enterprise in the future. According to the experts in this area, the minimum operating capital is the one which helps the enterprise bear the costs for 3 months, otherwise, it could sustain gross risks in the future. It is worth mentioning that the definition of SMEs uses the capital invested in the enterprise including the fixed capital (excluding the price of the land and the buildings) + the operating capital.

The field study of Ismailia governorate shows that the average of invested capital in SMEs reaches 89062 LE<sup>35</sup> / enterprise, being less in SMEs with less than five employees , which stand at 34067.3 LE / enterprise, while this average rise to 115275 LE /enterprise in the case of SMEs with five to ten employees , to reach 219308 LE / enterprise in enterprises which employees therein are from 10 to 20 employees . It is worth mentioning that the food and agriculture enterprises with less than five employees have achieved the highest average of capital, while the metal enterprises with employees from five to ten have achieved the biggest capital. As for the biggest capital achieved within the enterprises which employ from ten to twenty employees, it was achieved in the clothes and textile industries.

It is worth mentioning that the SMEs did not exceed the quantitative definition stated in the theoretical part of the study, either at the level of labour or at the level of their respective capital. It is also noted that the enterprises employing less than five employees do not need big capital compared to the other sizes in other industries, since the machinery and equipment used are relatively simple, in addition that they make their end production in other larger enterprises in return for a sum of money paid.

This raises a question on the possibility of cooperation and integration between the small size enterprises and the medium and big size ones in the same manufacturing area of a specific article. Here the researcher sees cooperation and integration in this way will be better from the sustainable development perspective. It helps to make a success for the SMEs and helps them to maintain in the case study. Table (5.1) shows the relationship between the average invested capital of enterprises and the number of employees therein.

It is worth mentioning that most SMEs in the study area suffer from lack of cash flow or operating capital. The majority of these enterprises rely on what is known in economics industry as the "earnest" money, which is part of money paid in advance for the costs of the end product which will be sold to the consumer. The field survey showed that 29% of the surveyed SMEs can bear the production costs (raw materials, labour wages, operating cost and transport costs) only for no more than one month, and 52% of the SMEs surveyed for between one and one a half month, while 20% of the surveyed sample can bear these costs for more than one and a half months. The least period for which an enterprise can cover its costs is, 48% of a month, and this was in the wood industry sector. The longest period an

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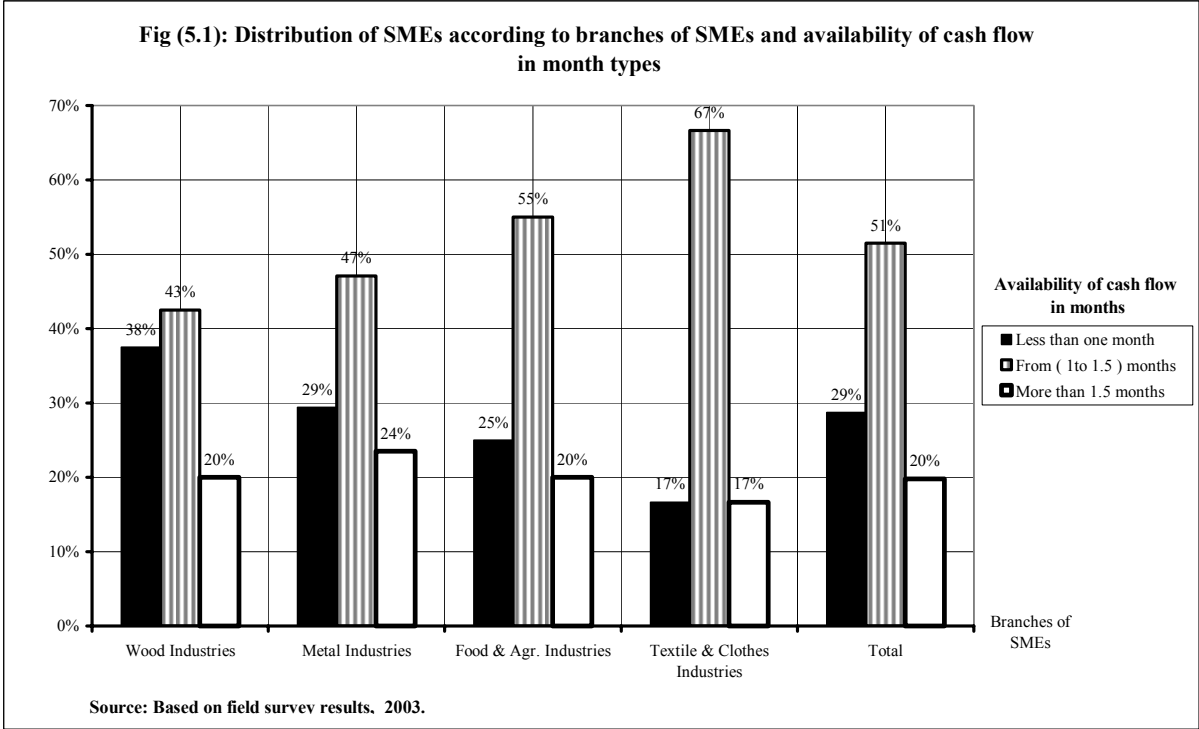
<sup>35</sup> One Euro = 7.5 LE according to figures of June 2004

enterprise can endure covering its production costs was 3.28% months, and this was in the metal industries sector. See Fig (5.1).

**Table (5.1): Distribution of enterprises according to average of invested capital and size of employees and kind of SMEs**

Branches of SMEs	Average invested capital according to number of employees of SMEs in LE			
	Less than 5 employees	From 5 to 10 employees	From 10 to 20 employees	Total
Wood Industries	29449	112063.5	268571.4	75771
Metal Industries	36701	149486	171429	77798.3
Food & Agr. Industries	44946	116633	128000	107410.7
Textile & Clothes Industries	37502	90000	375143	103900
<b>Total</b>	<b>34076.3</b>	<b>115275</b>	<b>219308</b>	<b>89062</b>

Source: Based on field survey results, 2003.



No doubt that the inability of the SMEs to cover the production costs threatens the stability of these industries, particularly their monetary obligation toward their employees. And in a case of the inability of these enterprises to market their production in a period no more than one and a half months, a period when 81% of the SMEs are able to cover their costs, this will lead to structural problems. These problems will start with temporary stop of SME operation. Then the gradual fall of the price of the products starts until they are reduced to prices of the production costs or less. And at the end, the SME will achieve a gross financial loss which leads to bankruptcy or closure of the enterprise temporarily or forever. The added value achieved by the SMEs is in general the indicator of the success of this

enterprise. This study will try to review the relationship between the operating capital for the enterprise (in terms of the specific period in which the enterprise can cover its production costs) and the added value achieved by the enterprise.

### 5.2.1.1 Relationship between the operating capital and the added value of the enterprise

It was of great importance to review the relationship between the operating capital and the added value of the enterprise, since the fixed capital, of course, varies from an enterprise to another according to the size of the enterprise and the used machinery which also vary from an industry to another. That is because there are enterprises which need huge capital due to the types of machinery and equipment uses, while another enterprise needs little fixed capital corresponding to its little and simple machinery and equipment.

So the operating capital will be more appropriate. It does not depend on the kind of industry nor does it depend on the number of employees or the machinery used, given that the role of the operating capital is to secure the production supplies and employees wages, as well as the costs of operating the enterprise for a longer period. This enables us to turn the operating capital into a measurable period of time, and the more period of operating the enterprise the more stable the enterprise is. As a result, the added value yielded by the enterprise would increase with the rise of the cash liquidity and vice versa. The period of time which the operating capital can cover, can be summed up in accordance with the following relationship:

$$\text{Number of months which the operating capital can cover in an enterprise} = \frac{\text{Value of operating capital}}{\text{Monthly funds spent on (employee's salaries + costs of raw materials + transport cost + operating cost)}}$$

The field study shows that 48% of the enterprises which have cash liquidity sufficient enough to cover the production costs for less than a month has sustained negative added value, while 41% achieved little added value (less than 4000 LE / year). Only 7% of these enterprises achieved medium added value (4000 : 14000 LE/year) and 3% of the enterprises achieved big added value (more than 14000 LE/year). On the other side, the number of enterprises with cash liquidity for a period between one and one and a half months hit 52 enterprises in the sample surveyed. The field study shows that the enterprises in this group did not sustain any negative added value. About 29% of this group achieved a small added value, however 65% achieved a medium added value, while no more than 6% from enterprises in this group achieved a big added value.

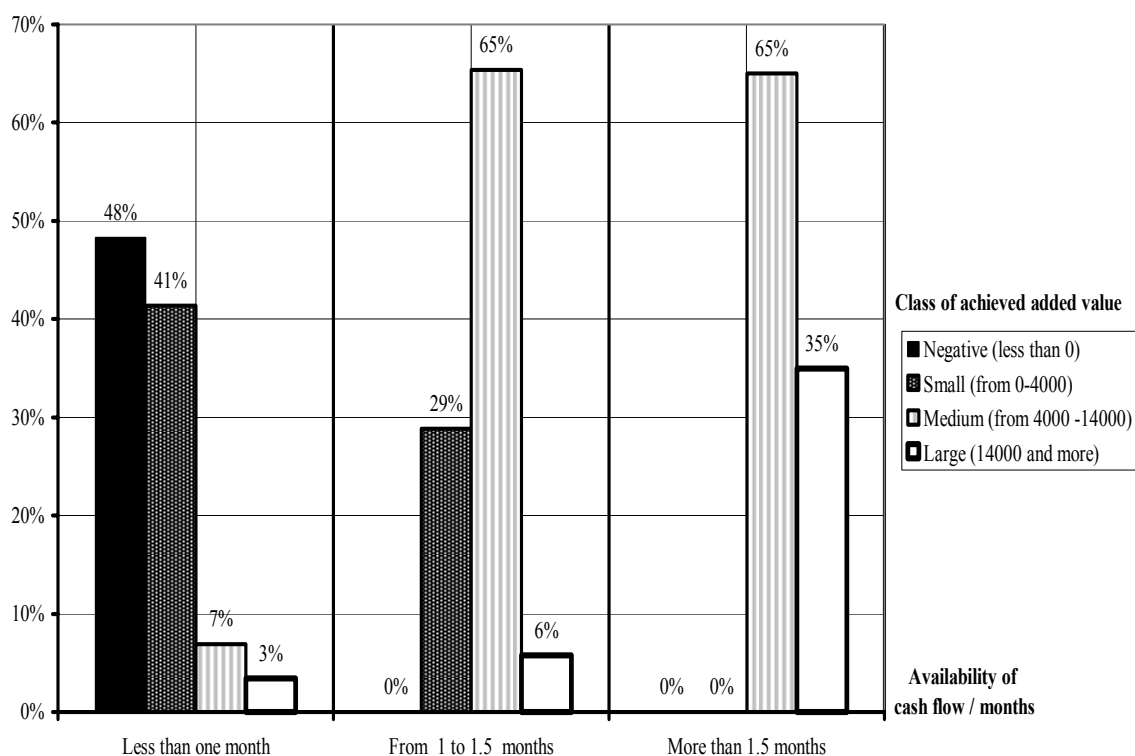
As for the third group which has cash liquidity sufficient for more than one and a half months, they hit 20 enterprises in the sample surveyed. Table (5.2) and Fig (5.2) show that the samples in this group did not sustain any negative or little added value. It achieved a medium added value in 65% of the enterprises surveyed. It also achieved a big added value in 35% of its enterprises. This shows, as previously said, that the more cash liquidity the the enterprise has the more successful it get to be stable and able to continue.

**Table (5.2): Distribution of enterprises according to availability of cash flow per month and class of achieved added value**

Added Value	Value Add per LE								Total
	Negative (less than 0)		Small (0-4000)		Medium (4000-14000)		Large (14000 and more)		
	No. of SMEs	%	No. of SMEs	%	No. of SMEs	%	No. of SMEs	%	
Availability of Cash flow / months									
Less than one month	14	48	12	41	2	7	1	3	29
From ( 1 to 1.5 ) months	0	0	15	29	34	65	3	6	52
More than 1.5 months	0	0	0	0	13	65	7	35	20
<b>Total</b>	14	14	27	27	49	49	11	11	101

Source: Based on field survey results, 2003.

**Fig (5.2): Distribution of enterprises according to availability of cash flow per month and class of achieved added value**



Source: Based on field survey results, 2003.

### **5.2.1.2 Relationship between invested capital of SMEs and the problems they face**

The results of the field survey show that the enterprises which enjoy relatively big cash liquidity (covering the production costs for a period more than or equal to one and a half months) are the ones with the least structural problems in the production system. SMEs which do not suffer from structural problems in this group reached 65%, while SMEs which suffer from problems in the end product marketing do not exceed 20%. SMEs which combined the problem of marketing and financing reached 5%, and those suffering from these two problems along with production did not exceed 5%. Also in this group, SMEs which suffer from the lack of trained labour were 5% only. The study did not record any enterprise suffering from difficulties in financing the production process alone, or ones suffering from problems in the production process, or ones combined with the problems of marketing, financing and labour.

On the other side, 56% of the enterprises with medium cash liquidity (covering the production costs from 1 to 1.5 months) suffer from structural problems in the production cycle in general. In this group, SMEs which suffer from problems in marketing, financing or labour are estimated at 13%, 4% and 2% respectively. However, no enterprise recorded any suffering from the production process. As for the enterprises, which do not suffer from any problem in this group, hit 42%.

As for SMEs which suffer from want of cash liquidity or those which can cover the production costs for fewer one month only, it turned out that they are the most enterprises suffering from structure problems in production cycle. Thus, about 76% of SMEs in this group hit from structure problems in the production process. About 28% of SMEs are suffering from problems in marketing, 24% have problems in financing, 3% with production problems, and 3% of SMEs in this group suffer from leak of skilled employees. While, those which suffer from both marketing and financing, or from marketing, financing and production hit 14% and 3% respectively, whereas no enterprise combined the problem of marketing, financing and labour. As for the enterprises which do not suffer from any problem did not exceed 24%. Fig (5.3) illustrates the distribution of SMEs in the study area according to the period viable for the operating capital and the kind of problems which face SMEs in the study area.

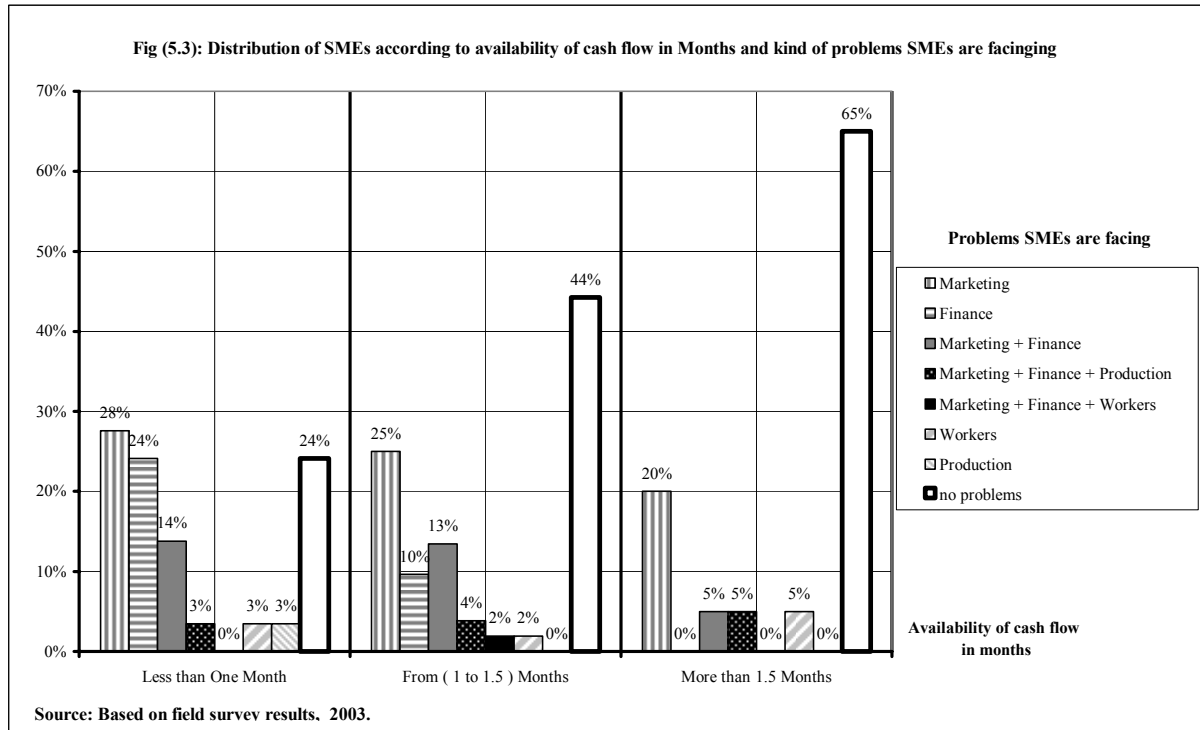
### **5.2.1.3 Relationship between the invested capital of the enterprise and the frequency of marketing the end product**

The field survey in the study area shows that SMEs with relatively big investments are more able to market their products periodically either daily or weekly than those with relatively small investments. Thus, the network of their relationships is bigger than that of the SMEs with limited capital. So, the market scale of SMEs with big capital is bigger than the market scale of SMEs with small capital. Also, these big investments enterprises have the ability to move their products from local markets to national ones by their transportation facilities which they own.

The results of the field study on the SMEs in Ismailia Governorate show that SMEs with relatively big capital (more than or equal to 168214.7 LE) succeeded in marketing their products daily at a ratio of 40%, and weekly at a ratio of 55% of the number of SMEs in this group. The ratio of SMEs which market their products with previous orders did not exceed 5%. Furthermore, the study did not record any SME marketing its production only one time monthly in this group.

On the other side, the medium capital SMEs (32321.6 to 168214.7 LE) were less lucrative than the SMEs with big capital in terms of marketing their products periodically. Only 27% of SMEs in this

group market their production on a daily basis, while the enterprises which market their production on a weekly basis did not exceed 38%. Also, 11% of the enterprises market their products monthly. It is noticed that the enterprises which market their production made to previous order rose to 24% in this group.

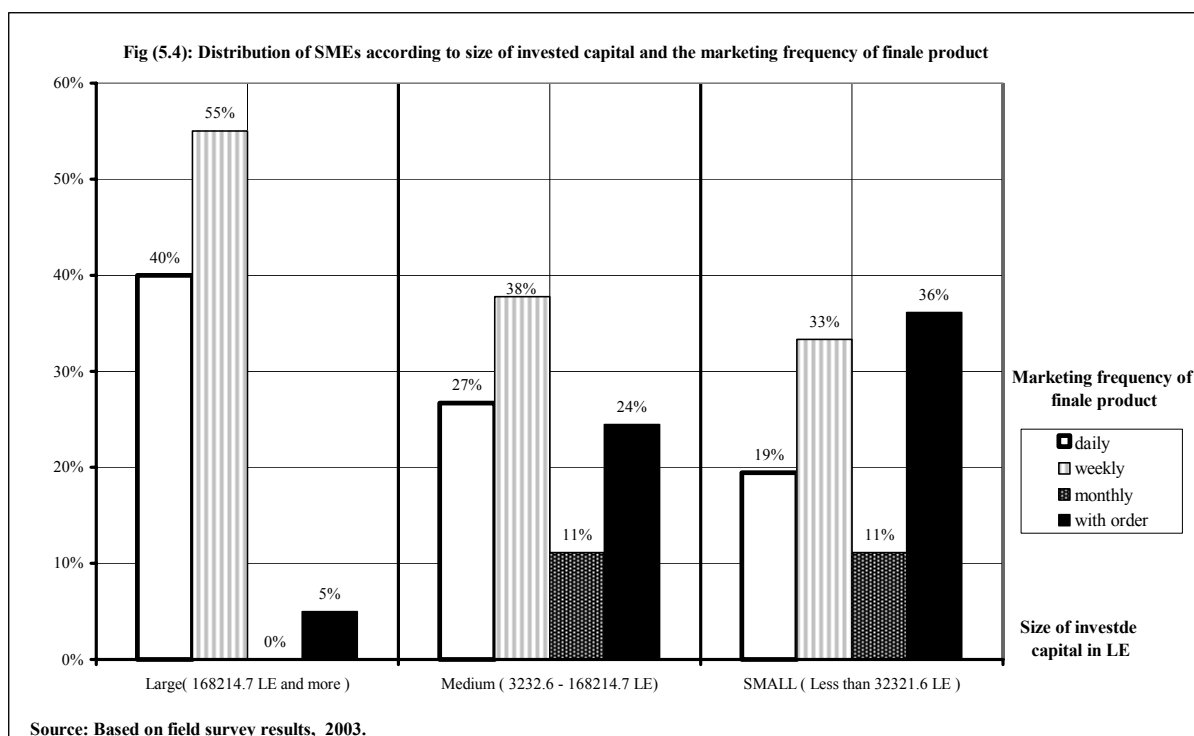


As for the enterprises with small capital (less than 32321.6 LE) they face extremely difficult problems in marketing their products periodically, since 19% of them market their products on a daily basis, while those marketing their products on a weekly basis did not exceed 36%. Also, SMEs in this group which are marketing their products on a monthly basis or made to previous order reached 11% and 33% respectively. Fig (5.4) shows the distribution of SMEs in the study area according to the value of invested capital and the frequency of marketing the end product thereof.

#### 5.2.1.4 Relationship between SME' capital and the available markets

The results of the field study show that the enterprises with relatively big capital have more capability to market their products at the national and regional levels than the medium and small capital enterprises. While, 50% of the big capital enterprises have the ability to market their products at the national, regional and local levels, whereas 25% of this group can market their products at regional and local level, and those which market their product only at the local level reached 25%.

As for SMEs with medium capital, only 13% of these enterprises can market their product on the national, regional and local markets, and 47% of this group able to market their products at the regional and local level, while 40% from the enterprises in this group can only market their products at the local level.



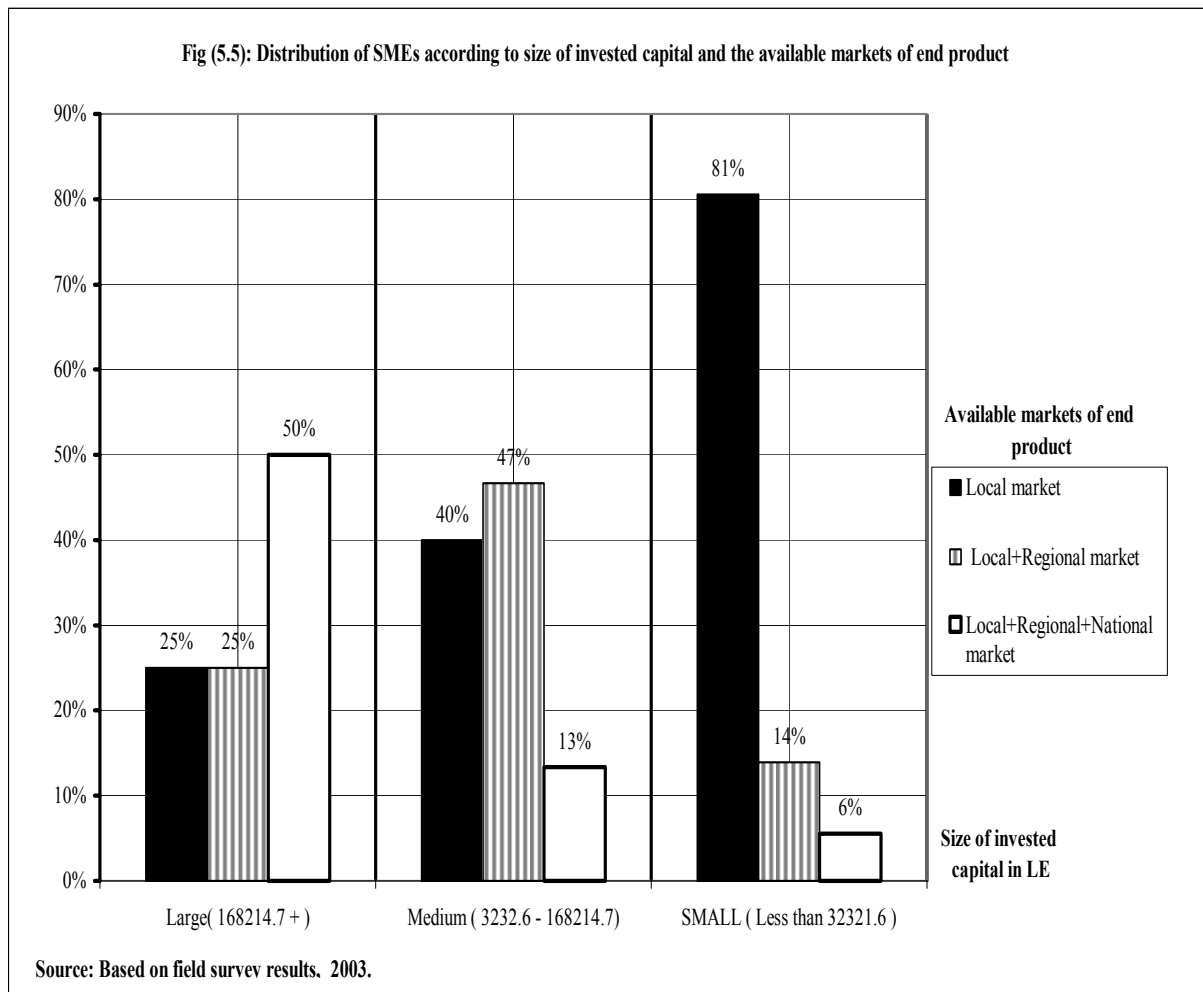
On the other hand, 81% of SMEs with small capital direct their products mainly to the local market, while only 5% of the enterprises in this group direct their products mainly to the local, regional and national market, while 14% of these enterprises in question market their product locally and regionally. Fig (5.5) shows the relationship between the invested capital of SME and the available markets.

### 5.2.2 Relationship between the used facilities of marketing and the frequency of marketing the end products

The field study shows that there are three patterns of marketing the end product in the study area. **First:** Marketing the product through the owner of SME himself. This pattern applies to 72% of the enterprises in the study area. **Second:** cooperation with other institutions, 18% of total SMEs markets their end products in coordination with retailers or wholesale traders or government exhibitions. **Third:** complete dependency on other institutions, while 10% SMEs in the study area rely fully on the wholesale traders or retailers or the government exhibitions to market their products.

However, marketing the end product through the owner himself does not help in marketing the product in a proper way. It remains a burden shouldered by the owner at a time when he should concentrate in the production process itself and addressing any obstacles thereof. So if he succeeds in the first step, i.e. the production process, because of his large experience in this field, he will maybe fail or do not achieve large success in marketing, which will reflect negatively on the enterprise itself.



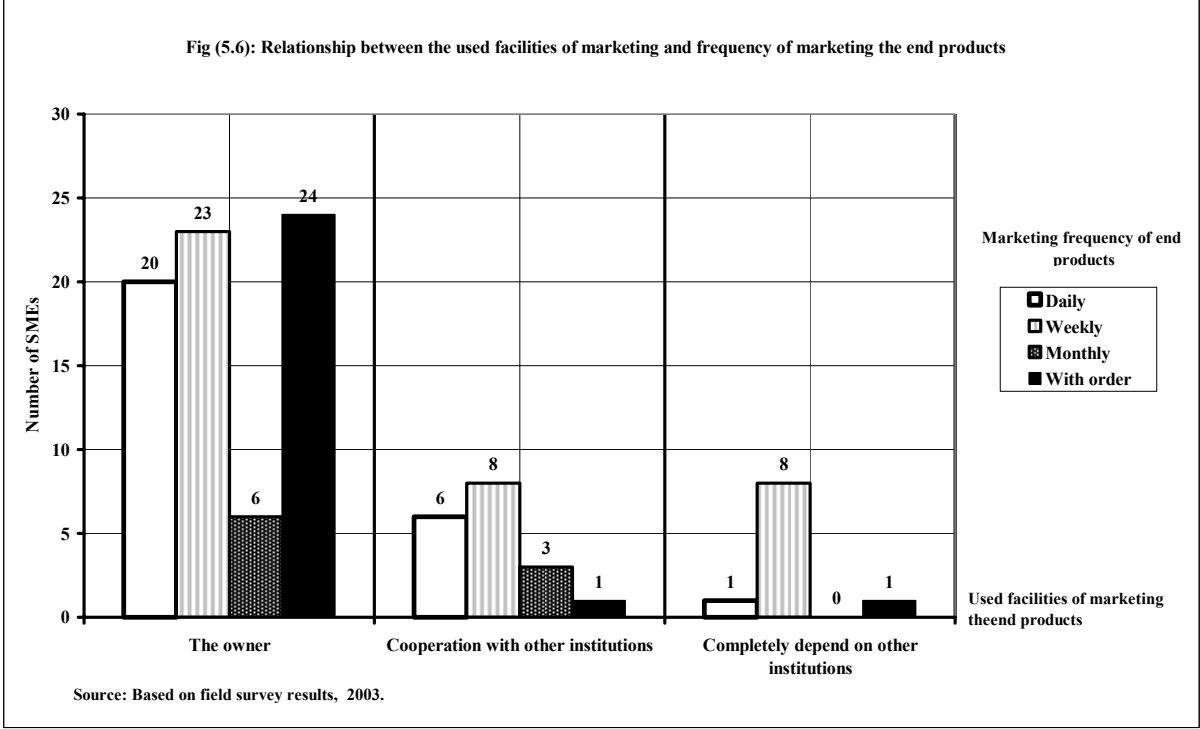


It is worth mentioning that 33% of the entrepreneurs, who market their products themselves, manufacture their product only made on order (a la carte). It means that without a prior order they can not manufacture any product and, in turn, go through a temporary stop of their activities. This may continue for several days and may be several months in some enterprises, something which threatens many enterprises with failure or inability to continue. However, the field study shows that 27% of the enterprises in this group can market their products on a daily base, 32% on a weekly basis, and 8% on a monthly basis.

Concerning the enterprises which cooperate with other institutions in marketing their products, this group has relatively excelled the previous group in terms of marketing their product. The study shows that 33% of the enterprises in this group market their products on a daily basis, 44% of them on a weekly basis, and 17% on a monthly basis. This group is also distinguished from the first and the third, in that the ratio of those marketing their products according to order (a la carte) are very little, and do not exceed 6% of the total enterprises of this group.

As for the third group in this context, it is a group which depends fully on other entities in marketing their products. It turned out that 80% of its enterprises market their products on a weekly base, while 10% of them market their products on a daily base. As for the a la carte, or the made on order production, only 10% of this group produce their products in this way. This shows greatly that the second and third pattern in marketing their products are better than those of the first pattern. It means that there is a greater chance and sustenance wherever there is network of the production system of

SMEs coordinating between the productions and marketing. However, these two patterns form no more than 28% of the total enterprises in the study area Fig (5.6). The researcher sees that to achieve the sustainability of the SMEs in the study area, SMEs should be adopting the cooperation policy with each other in a way that achieves integration between production and marketing, resting on a good visibility study of the market.



**5.2.3 Relationship between marketing frequency of the end product and the problems SMEs face**

No doubt, SMEs in general, today, face great challenges at the background of liberalization of trade and the openness of markets domestically and externally, and the competition rules of the sustainability of the enterprise have become based on a group of flexible structures and production. These criteria are governed by the competition over the product rather than the price, not to mention the ability of the enterprise to meet the demands at the stated time, as well as the unstopping creativity and methods of modern administration bases on the team work policy. So many of the SMEs in the advanced world countries started to understand the rules of the game and adjust their positions in a way that secures them success and sustainability, especially that such SMEs have the flexibility to cope with the new demand on their specific items.

But unfortunately, the SMEs in the third world countries including Egypt still suffer from stagnation and still go on the same traditional ideology of production, which resulted in a gap between supply and demand, or the non compatibility between supply and demand on the item. This led to the SMEs losing their competitive potential, particularly in the absence of training and rehabilitation centres which help in raising the standard of the small investors and employees to enable them to cope with the new competitive requirements. This negatively reflected on the balance of the supply and demand, which, in turn, led to stagnation in many enterprises.

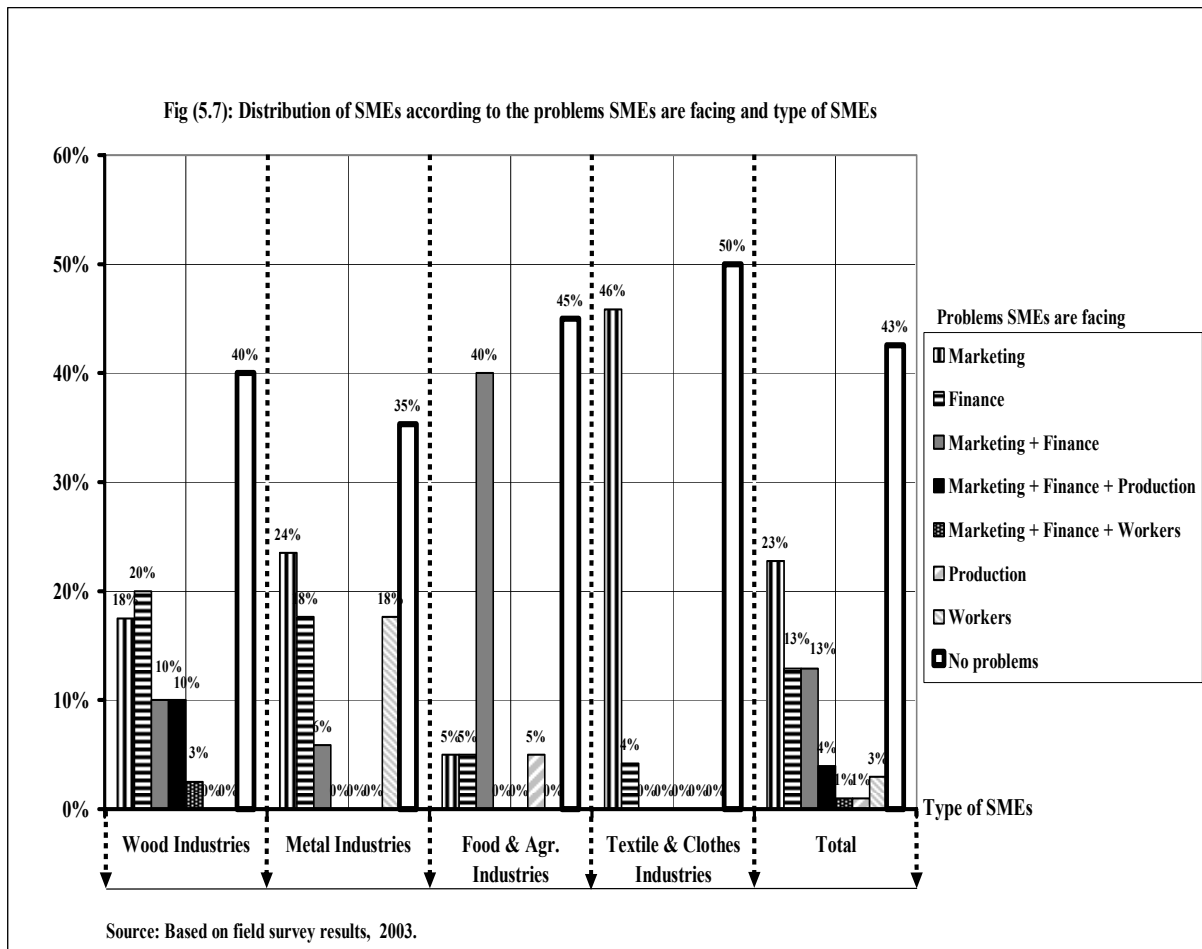
The situation in Ismailia does not differ from the general situation in Egypt, now that the effects of instability of supply and demand structure started to appear on some items and products of the SMEs. This led to the stagnation of several of them and as a result, a major decline in the price of the end product. The price of the product in some enterprises reached less than the cost price. This resulted in the emergence of several structural problems in the production process. Thus, the inability to market the products led to shortage in cash flow which must exist for producing more items and products.

So the problem of financing started to pop up side by side with both the marketing and production. The shortage of cash flow also led to the leaving of several skilful employees with high wages to other enterprises which do not suffer from this problem. These skilled employees are replaced with unskilful employees who further negatively affected the quality of the product and of course the marketing process. This led to a further stagnation and a growing cash liquidity which eventually led to the closure of several SMEs which could not withstand these aforementioned obstructions.

From the researcher's point of view, the phenomenon of the closure of SMEs in Egypt in general and Ismailia in particular, is correlated to the absence of a plan on the national level to support these enterprises and to specify the areas they should cover. In general, the imbalance between supply and demand has had a bad effect on the case study. The field survey results show that 57% of the SMEs in the study area suffer from one of the main problems in the production process, either marketing, financing, employees or production, or combined problems such as financing and marketing or marketing, financing and production, or these latter problems along with the employees one. Fig (5.7) shows the problems which the SMEs in the study area suffer from, each according to the type of its industry.

Also the results of the field survey show, as said before, that the marketing problem comes on top of the problems which the SMEs in the study area suffer. As 23% of the entrepreneurs said that they actually face problems in marketing their products, while 13% of them said they face actual problems in financing the production process, and that about 3% of the enterprises suffer from shortage of the trained employees. Also, 1% of SMEs in the study area suffer from the problems of the production process and quality of the product.

On the other hand, there are some enterprises which suffer from complicated problems. The field study showed that 13% of SMEs suffer from both financing and marketing, while about 4% of them suffer from the triangle of marketing, financing and production, whereas 1% suffer from marketing, financing and employees problem. Thus, the total SMEs which suffer from complicated problems in the case study reached to 18%. The total SMEs which suffer from structural problems in the production process reached 57%, which is considered a very big percentage. The question now is: How long can these SMEs withstand the ghost of bankruptcy and closure in the light of high market risks?



From the researcher's view, one of the main factors of failure of these SMEs in Ismailia Governorate is the inability of the small investors to study the market well. Also, the haste on the part of the junior investors who want only to start a new enterprise in reliance of loans granted to them by the SMEs agency in the governorate of Ismailia or the SDF.

The failure, which these enterprises suffer from, maybe also due to the absence of centres for small entrepreneurs, which can support them technically to start and manage such enterprises on the right way. And in the absence of the proper qualifying of these small investors in the study area, many of them repeat the successful enterprises. Thus, they believe that they will get the same success which their counterparts gained. This makes the supply from the same product overruns the demand on it. And this, consequently, will lead to difficulties in marketing these products, ending eventually to great loss of the enterprise which could lead to bankruptcy and closure.

On asking the experts and technicians in Ismailia about SMEs which go bankrupt or are threatened of closure, the director of SMEs in the governorate said that: there are actually many enterprises which started 3 years ago but now it went bankrupt or closed. From his point of view, these SMEs could not adapt themselves with the market nor did they succeed in marketing their products. They started their manufacturing activities with loans from the SMEs fund in the governorate of Ismailia and actually they created products but they could not market them. This forced them to market their products at prices less than the cost price, and as a result, they could not pay the annual instalment to the fund of support of SMEs in the governorate nor could they pay for the salaries of employees.

They eventually closed and went into bankruptcy. On asking the official in charge of these enterprises, he said that about 30 enterprises out of 50 went bankrupt, i.e. about 60% of the enterprises which started their activities closed. This is a very big percentage which poses a bad omen to the future of the SMEs in Ismailia Governorate.

One of the reasons for the loss and bankruptcy of several SMEs is the absence of an integrated production system or any form of organization and coordination among these enterprises in producing and marketing products. What raises more fears is that 22% of these SMEs only make their products made on order, and that 73% of these enterprises market their products by themselves. As the study showed, 52% of these enterprises which market their products by themselves face a problem in marketing these products; in addition that 23% of these enterprises which market their products themselves face problems in both financing and marketing. This conenterprises the possibility of more closures in Ismailia Governorate if they continue to work individually without coordination with each other and without going on the sound scientific methodology in studying the market positions.

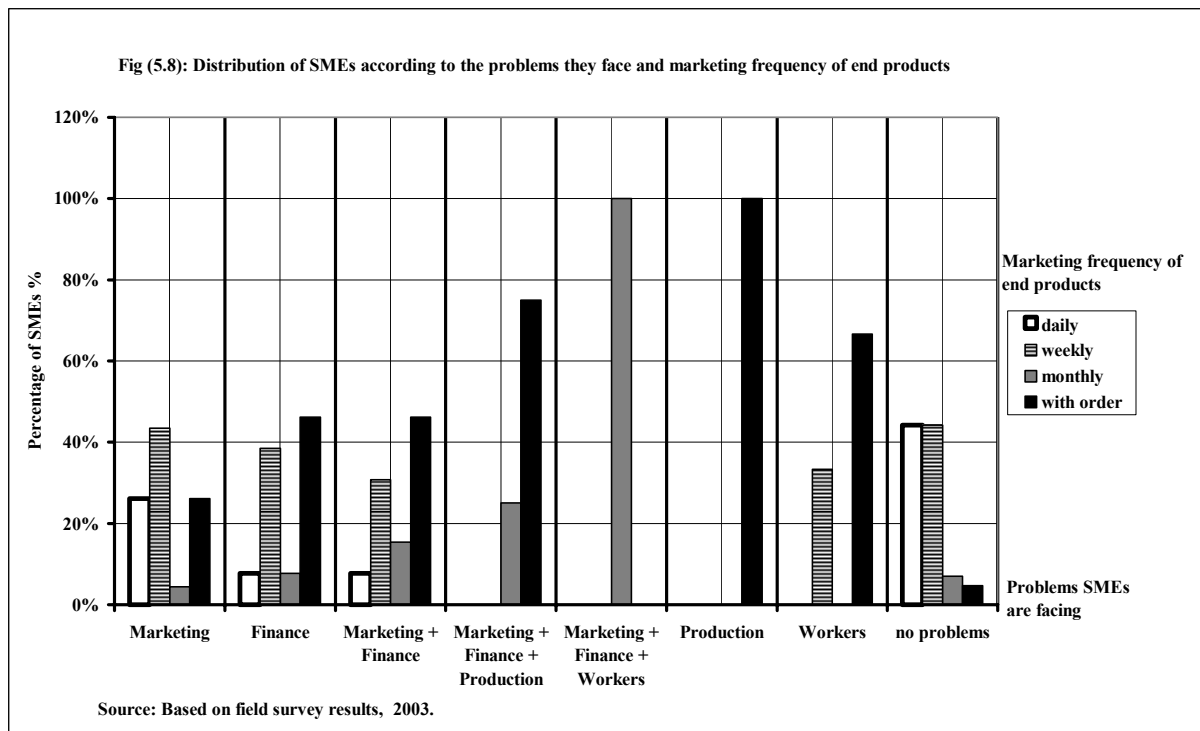
One of the indicators of the serious future of these SMEs in Ismailia Governorate, as the researcher sees, is represented in the relationship between the problems facing the SMEs in the study area and their ability to market their products. According to the field study, 27% of SMEs which suffer from the problem of marketing are able to market their products on a daily basis, and 46% of the enterprises in this group can market their products on a weekly basis, 4% of them market their products on a monthly basis, while no less than 23% of this group are not able to market except products were agreed upon with clients.

However, the matter is worse for those enterprises which have problems in financing the production process, with 8% of them only marketing their products on a daily basis. As for SMEs which do not produce products except those were agreed upon with clients, they reached 46% of this group. The situation is worse with the enterprises which suffer from a problem in the production process and the quality of the product, since 100% of the enterprises surveyed in this group are producing only with a prior agreement with clients. The situation does not differ a lot with the enterprises which suffer from unskilled employees compared with the previous group, since 33% of these enterprises market their products on a monthly basis while the great majority of this group (67%) produces only after a prior agreement with the clients.

On the other hand, the enterprises which suffer from combined problems in the study area are worse than those which suffer from simple problems, since 61% of the enterprises which combine the problem of marketing with financing market their products made on demand with a prior agreement with the clients, while 39% of the enterprises on this group market their products on a daily or weekly bases. As for the enterprises which suffer from the triangle of problems of marketing, financing and production, no enterprise was able to market its products on a daily or a weekly basis, with 25% of them having the ability to market their products on a monthly basis, while 75% of the enterprises in this group only make products after a prior agreement with clients. No one of the enterprises suffering from problems of marketing, financing and employees altogether could market their products on a daily or weekly basis, while all of them succeeded in marketing their products on a monthly basis.

It is worth mentioning that 88% of the enterprises which don't suffer from structural problems managed to market their products either on a daily or a weekly basis, while 12% of these enterprises market their products on a monthly basis or according to a prior agreement with the clients. Fig (5.8)

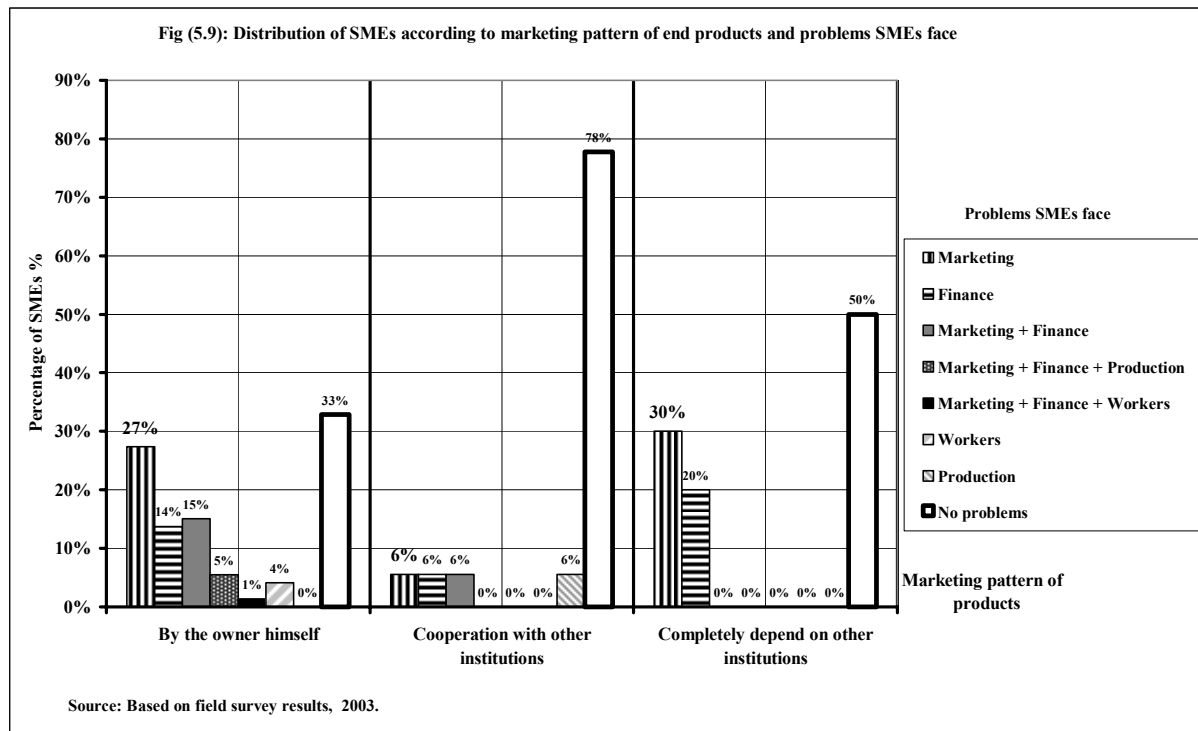
shows the distribution of SMEs in the study area in terms of relationship between problems facing the enterprises and the frequency of marketing the end product.



It is worth mentioning that the method of marketing the product made on order is the most common method in the study area, although, unfortunately, this method is the most harmful one to the SMEs because it leads to a temporary unemployment until an agreement is made on a new order. And as the period of waiting gets longer, the enterprise gets unable to pay the salaries of its employees, which prods the trained employees in these enterprises to look for more stable job opportunities. This, in turn, leads to the enterprise losing most of his work team, which forces him to look for new employees, who need a time until they adapt with the work system in the enterprise. This weakens the quality of the product or prolongs the period stated for delivery of the product. In this case, the enterprise gradually loses its trust with the clients while the production cost will rise and the enterprise gets down into a vicious circle struggling only for survival.

From the research view, the key of succession of small industries is the ability to market the product. As without marketing of the products, there will be no succession or sustainability for these small industries. Therefore, some small enterprises understood this lesson and searched for alternative methods to market their products. They cooperate wholly or partially with other institutions to market their products such as; wholesale or a retailer dealer. Some enterprises depend on governmental exhibitions which are held permanently or occasionally for marketing their products. However, the expected profit margin for these enterprises in such case is less than the expected profit margin for them in case of direct relationship with the client. But, regular small profit is better than interrupted large profit. In the second case the enterprises success to market their products rapidly and that of course help the enterprises to get the necessary cash flow to start new production. And accordingly, the enterprise realizes the required sustainability.

The field study shows that SMEs which depend wholly or partially on other institutions to market their products are the fewer enterprises in problems which are facing the productive process as stated in Fig (5.9). More than 33% of enterprises which market their products themselves are not facing any structural problems in the productive process, while this ratio rises in case of depending wholly on other institutions to market their products to be 50%. This ratio also rises in case of depending partially or cooperates with other institutions to market their products to be 78%.

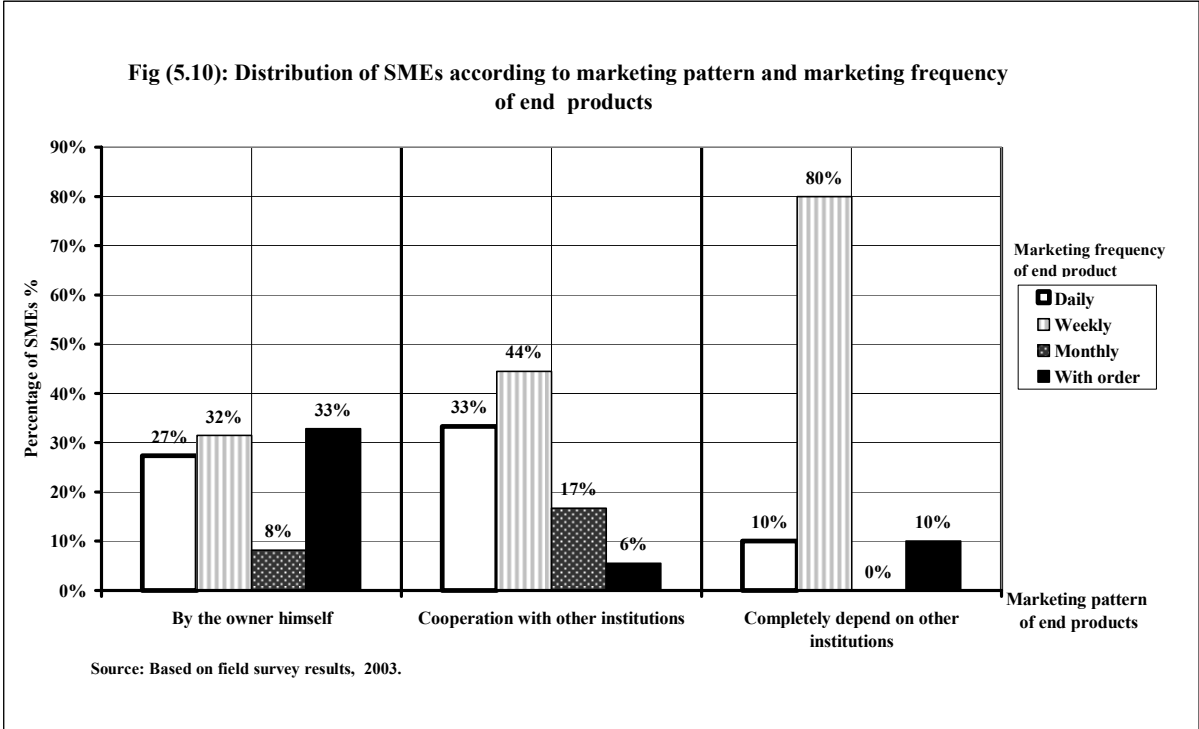


It is cleared also that the enterprises which market their products themselves have various structural problems reach to 6 kinds of problems (marketing – financing – production – marketing and financing – marketing, financing and employment – marketing, financing and production). While the variety of such problem decreased in enterprises which cooperate with others to market their products to reach 4 kinds of problems (marketing – financing – production - marketing and financing). While the kinds of problems facing the enterprises depending wholly on others to market their products decreased to be of two kinds only (marketing and financing).

It is also noticed that the enterprises which cooperate or depend on other organizations to market their products have the ability of marketing their products periodically (daily or weekly) more than the enterprises which depend on themselves in the marketing for these products. Furthermore, the ratio of the enterprises which produce upon prior agreement with the client are in the case of enterprises which cooperate or depend on others in marketing their products less than in the case of enterprises which market for their products by themselves.

It is shown in figure (5.10) as it cleared in the status of enterprises which cooperate with other organizations to market their products, that a ratio of 77% of such SMEs are able to market their products periodically (daily/weekly). While this ratio decreased with the status of the enterprises which depend on themselves in marketing their products to reach 59% of the enterprises in this group. On the other hand, in the enterprises which cooperate with others to market their products, the

production style decreased according to prior demand to reach 6% only and increased to 10% in case of the enterprises which depend wholly on others in marketing their products. While it is increased to reach 33% in case of the enterprises that have no cooperation with other organizations to market these products.



**5.2.4 Summary**

The aim of this topic was to examine the sub-hypothesis which stated that SMEs, because of their small capital resources, instability of supply and demand structure and high market risks, can only achieve limited long-term development perspective. In order to examine this hypothesis, the related factors and variables were analyzed, thus, the effect of the invested capital of the SME (as independent variable) on the added value of the enterprise, problems this enterprise faces and the marketing frequency of the final products (as dependent variables) was measured. Also the effect of the pattern and marketing way on marketing rate of the final product of SMEs was tested. In the same time, it was analyzed the relation between problems SMEs are facing and the marketing frequency of the end products in these enterprises.

The research indicated that the limited amount of capital invested, defined as cash liquidity plus fixed assets excluding land and building(s), plays an important, primary role in the ability of SMEs to survive and continue. The greater the amount invested in working capital, (i.e., capital for the costs of operation, production and labour for the greatest period of time possible), the greater is the ability of SMEs to continue on a stable path and overcome market risks.

The empirical results also showed that approximately 29% of those enterprises from the study area can only finance production costs for a time period of less than one month; whereas nearly 52% of the SMEs in the study area can cover production costs for a time period of one month and a half, and only about 20% of these small-scale concerns in the area can finance production costs for a longer period of



time. Experts and specialized scientists agree that successful enterprises in Egypt can be characterized as being able to support production costs nearly exceeding a three month period. From this it is evident that vast majority of SMEs in the study area would be categorized as economically unstable.

By analyzing the relationship between an enterprise's working capital and the variables of economic stability, specifically including added value and problems encountered by the enterprise, it was obvious that the greater the amount of available working capital (capital available to cover costs of operation, production and employees for the longest time period possible), the greater the capability of the enterprise to stabilize and to endure market risks. This translates to a greater ability on the part of the enterprise to support the survival of many job opportunities in the region and to subsequently enhance and strengthen the role such an enterprise plays in sustainable regional development.

Entities with large amounts of working capital managed to realize a greater added value than those enterprises with medium or small amounts of working capital. Moreover, when examining the relationship between the amount of working capital available relative to the level of problems experienced by a small enterprise, a much greater percentage of those entities with large amounts of available working capital experienced relatively fewer problems than compared to those entities with medium and small amounts of available working capital. Furthermore, "large-capital" SMEs are generally more capable of marketing and distributing their products periodically, that is daily or weekly. This can be attributed to the fact that the large-capital enterprises possess their own means of transportation and are better able to control transportation costs thereby resulting in cost savings and product price reduction. Since medium and small capital enterprises are not in a financial position to possess such means of transportation, they are unable to exert such control over transportation costs and product prices must reflect these higher costs. Consequently, these smaller entities are less able to penetrate the market. Furthermore, it was evident that all the enterprises that cooperate with specialized marketing institutions suffer fewer problems and are considered to be among the highest category in realizing added value whereas self-dependent enterprises suffer a larger number of problems, greater marketing risks and the realization of low levels of added value

The research has also concluded that most of the small investors in the study area have insufficient knowledge regarding market forces and requirements. Consequently, these concerns are compelled to copy past and current successful enterprises patterns in an attempt to achieve the same or similar levels of success. As a result, the supply of goods and services in the marketplace will increase relative to the demand that is present; the market then becomes oversaturated. This imbalance in the marketplace can then lead to difficulties in the marketing of products. This ultimately creates negative impacts on the future of SMEs, especially those with limited capital enterprises, as they depend primarily on the local market for survival. The nature of large-capital enterprises and their ability to market their products at both the regional and national levels is such that these particular concerns are better able to resist the critical point where an enterprise is forced to discontinue conducting enterprises; therefore, the length of survival of larger enterprises is generally greater than that of SMEs with limited capital.

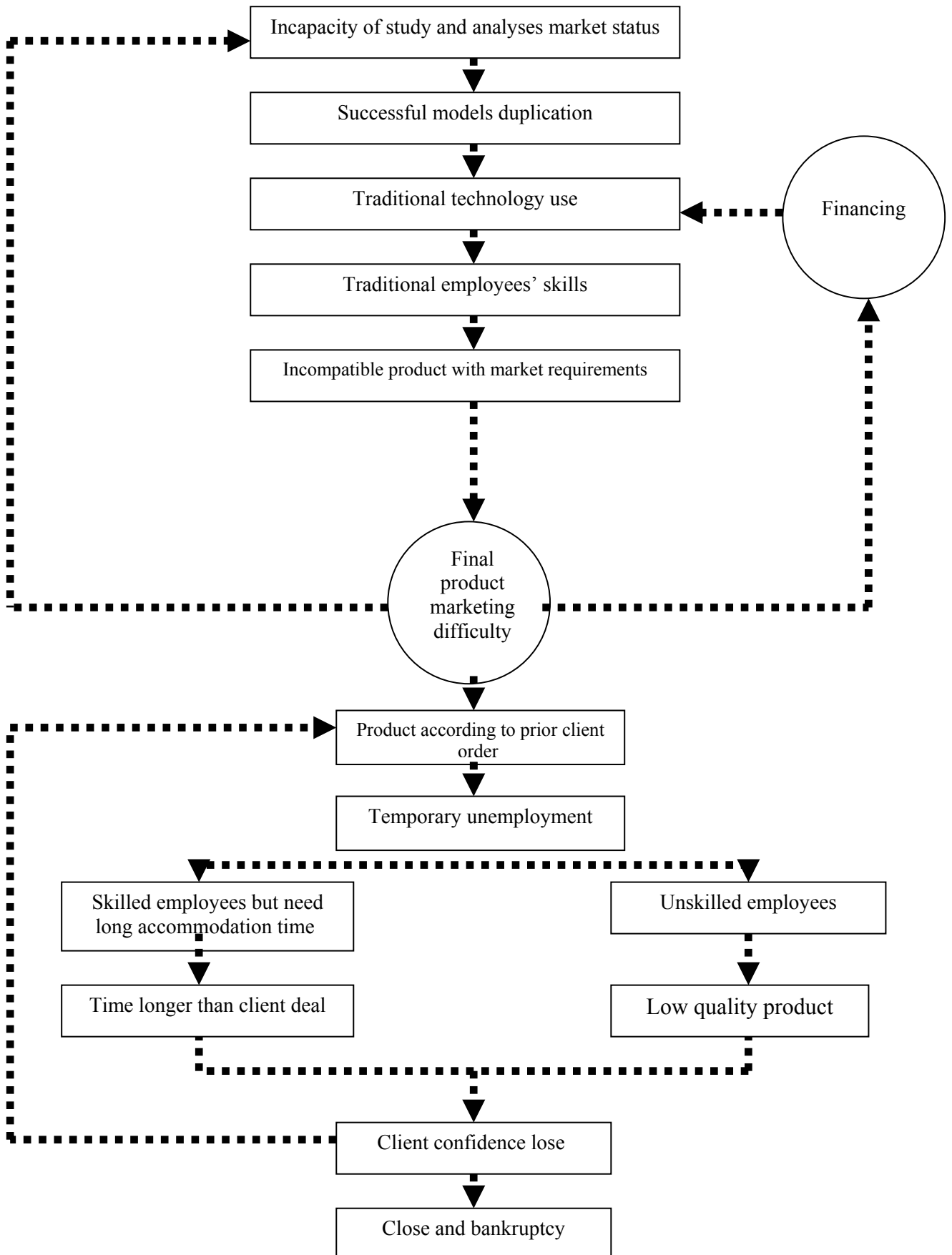
Based on field studies and interviews with a variety of experts and specialists, it was found that all the enterprises that failed went through several stages prior to failure. The following information recapitulates the characteristics of each stage. **The first stage is the repetition by the enterprises of successful enterprise models** and is attributed to the fact that the small investor is unable to understand or comprehend the market dynamics and related primary requirements. Action is limited to imitation of previous success stories in an attempt to achieve the same success met by his

predecessors. This results in product availability that runs counter to market requirements (i.e., demands), and hence the difficulty of marketing these products and the chain of losses begins. As a result, production slows and gradually stops forcing the enterprises into **the second stage, namely the stage of production according to the previous order from / placed by the customer**. This type of production pattern sets the wheels in motion for the enterprise to lose high-wage, skilled employees that, in turn, join other sustainable, productive enterprises. Unskilled employees then fill the positions formerly filled by skilled employees which result in time delays within the production system of the enterprise. Production suffers, and either lower-quality products are produced or increased amounts of time are needed to produce and sustain the higher-quality production standard. This, consequently, moves the enterprise into **the third stage, the customer's loss of confidence in the product/enterprise**. This stage can be characterized by the elongation of temporary unemployment periods that finally becomes permanent unemployment in the worst case scenario. **The enterprise then enters the fourth stage, that of closure and bankruptcy**. As shown in Fig. (5.11).

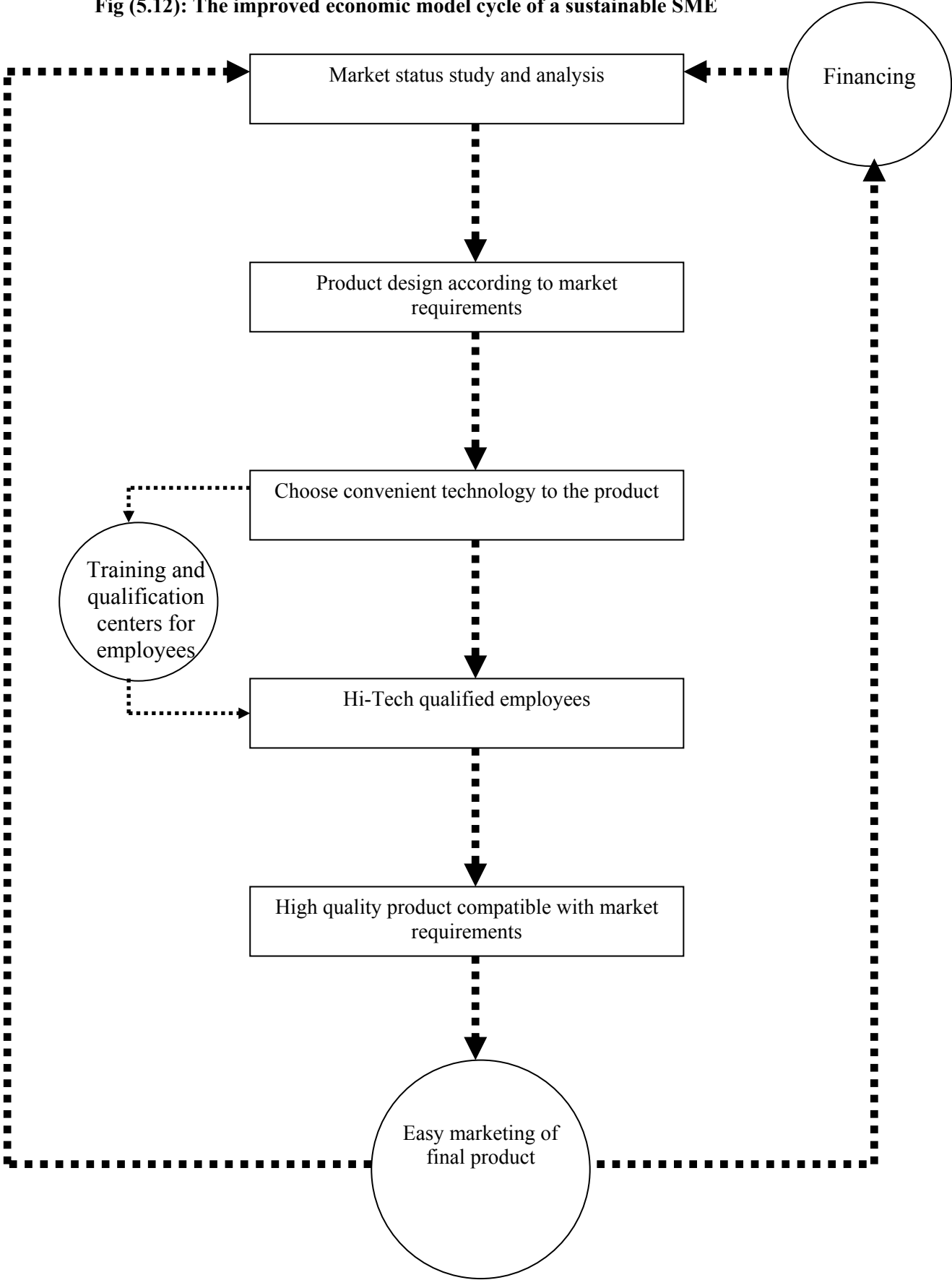
The research has suggested an improved model for securing sustainability of SMEs and realizing a great success in economic development, in general. This model should begin with a thorough study and precise analysis of the market dynamics in an attempt to identify the latest and most recent market demands and requirements. Next, product design would incorporate these market demands via appropriate and adequate specifications using the least expensive means possible for as long as possible. Next, the appropriate production technology would be selected in accordance with commodity production requirements; employee training relevant to the technology used and production processes is necessary at this step to help sustain the required production quality. The result will be the production of a high-quality product that meets the market requirements with the least amount of cost possible. This would, thus, facilitate product marketing. The cycle repeats as the market dynamics are analyzed once again to identify the latest demands imposed by new developments and innovation. As shown in Fig (5.12)

This research highlights the fact that success and sustainability of SMEs can generally be achieved through the realization of this model. Any defects or disorder in this production cycle will subsequently lead to a breakdown of the entire production system which, in turn, generates a host of structural problems. Consequently, the enterprise will experience difficulty relative to survival. However, this model would be very difficult to apply to SMEs due to the high "individual" labour costs these entities must bear during each stage of the production cycle. Each stage, incorporated into the production system, necessitates the presence of an entire team to achieve successful results.

**Fig (5.11): The current economic model cycle of SMEs in the study area**



**Fig (5.12): The improved economic model cycle of a sustainable SME**



Source: The author, based on the different references in this field 2003.

### **5.3 Social constraints SMEs face towards sustainability**

Small and medium-sized enterprises are an important part of a nation's economic activities. SMEs drive national economic activities by providing inexpensive basic parts to large-scale industries and by manufacturing goods which are not profitable for larger industries to produce. Moreover, SMEs employ a large percentage of the employees in many countries with the total number of employees in SMEs being more than that of larger industries. In contrast, however, productivity and working conditions are better in large enterprises than in SMEs. Improving working conditions and productivity in SMEs is important for national economic growth, as well as for the owners and employees of the enterprises. Furthermore, improved working conditions are essential for achieving an overall national level of improved working conditions and productivity and, therefore, an important goal for labour inspection.

In general, this topic aims to identify the social constraints which threaten the sustainability of SMEs, and in broad terms, to examine the second sub-hypothesis which states that small industries provide job opportunities for low-qualified persons, although, SMES do not provide appropriate social insurance or adequate safe working conditions. All, of which, would, consequently, have negative impacts on sustainable regional development. In order to verify this hypothesis, the effect of these social constraints is measured as an independent variable, whereas the capability of these SMEs to survive represents the dependent variable. The social constraints include the following:

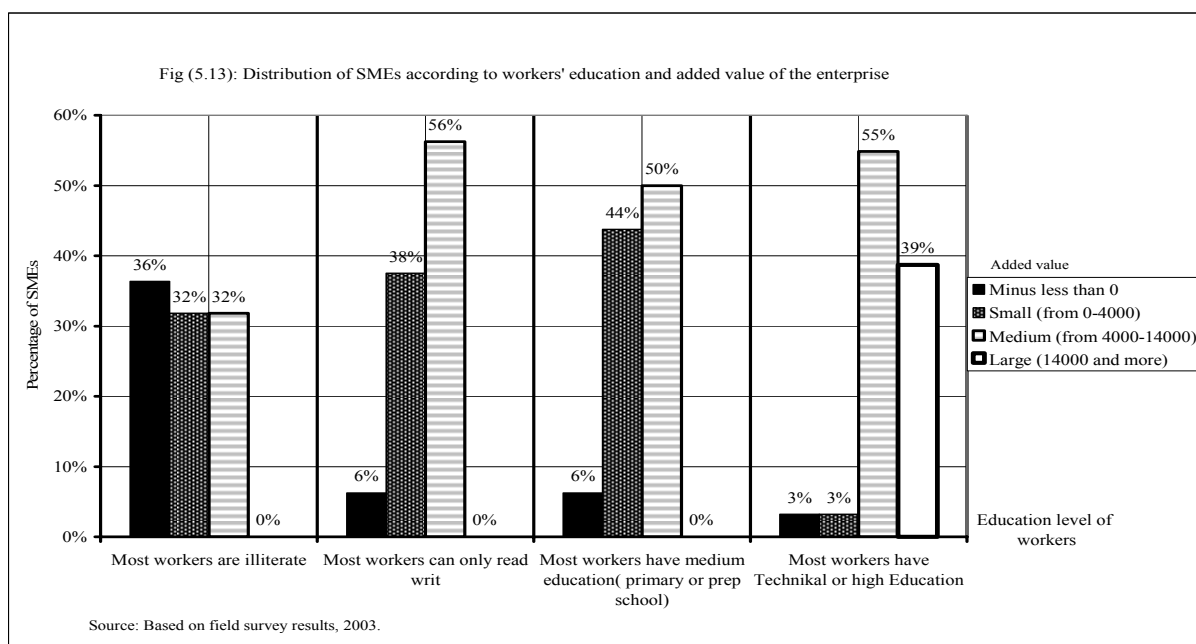
1. Prior experiences or training gained by the employees in the manufacturing field;
2. The levels of employees ' education;
3. The level of safety conditions of work; and
4. The ratio of employees within SMEs who have social insurance. Whereas, the capability of SMEs to survive is represented by the following variables:
  1. The level of the added value accomplished by the enterprise;
  2. The frequency of marketing of products;
  3. The problems from which the enterprise suffer; and
  4. The frequency of machinery maintenance. This analysis has yielded many results that can be summarized as follows:

#### **5.3.1 Relationship between the level of employees ' education and SME sustainability**

The field survey indicates that SMEs whose most of their employees are illiterate has ultimately low added value in general. This can be easily illustrated by the increase in the percentage of SMEs with a negative added value in this group, to almost 36% from the total numbers of enterprises. This is obviously the largest percentage in comparison with the other groups, as the percentage of the enterprises with low added value reached (from zero - 4000 LE) has been similar to those with medium added value (from 4000 - 14000 LE) with a percentage of 32% from the total numbers of enterprises for each.

On the other hand, the enterprises whose employees attained low educational level (as they can read and write), or medium levels (as they attained primary or preparatory education) have accomplished higher added value than the enterprises in the previous group. This was indicated by the fact that only 6% of the enterprises in this group has negative added value, whereas the percentage of those with low or medium added value has reached 94%. However, none of the SMEs in this group has attained any high added value.

In case of SMEs whose employees attained high educational level (as they have technical education and higher) accomplished the highest added value in general in comparison with SMEs in the previous two groups. Furthermore, it can be clearly notified that the enterprises in this group with negative or low added value reached 6% only, whereas the percentage of these enterprises with medium or high added value increased to reach 94% of the number of enterprises in this group, see Fig (5.13).

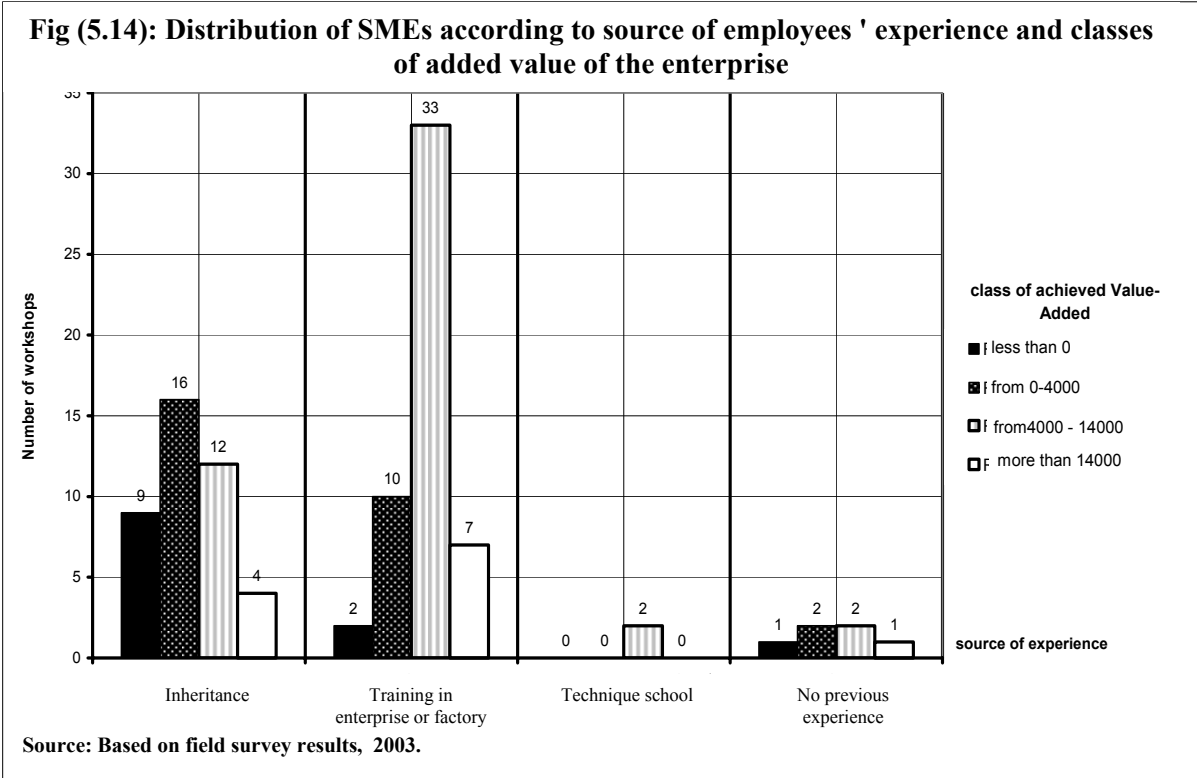


Undoubtedly this indicates that the employees' educational level plays an important role in achieving real benefits in SMEs field. As higher education employees' level elaborates their minds, enables them to efficiently deal with machines, facilitates their comprehension for the methods of machines' operation, and consequently enhances their capability of achieving the assigned tasks efficiently and quickly. However, the previous figure illustrates that some SMEs whose employees have high education levels have negative or low added value. Whereas a percentage of enterprises with high employees' illiteracy ratio (most employees are illiterate) has achieved medium or low added value. This can be justified by the fact that education only is not enough for accomplishing good returns from small industries, as training and gaining experiences play important role in this field as well. In broad terms, these experiences play vital roles in enhancing the product quality, and in return achieving the required benefits. This would be clearly verified in the next lines.

### 5.3.2 Relationship between the professional qualification for employees and SME sustainability

The field survey has indicated, as we mentioned before that the training whether it is in enterprise or factory or training centre represents the main source for prior experiences for the owners of SMEs with percentage reaching 51% of the sample, this is followed by inheritance of experiences through passing them from one generation to another with percentage 41% of the sample. The technical

education came in the end with percentage about 2%. As well as 6% of the sample did not receive any training before their work in the SMEs field. The question now is “To what extent do the previous mentioned patterns affect the success of SMEs in the study area, and to what extent these patterns can enhance the capability of SMEs to be sustainable?” To answer this question, the relationship between the source of the prior experiences gained for the owners of the enterprises and the accomplished added value has to be examined, this can be illustrated in Fig. (5.14).



It can be evidently clear that the entrepreneurs of SMEs who gained their experiences through training in similar enterprises or in training centres are more successful than those who gained their experiences through inheritance from one generation to another. As, there are 40 cases from a total of 52 cases (77%) of the enterprises whose owners gained experience from training centres or similar enterprises have accomplished medium and high added value. Whereas, only 16 cases of 41cases (39%) of the enterprises whose owners gained experience through inheritance accomplished the same averages of added value. On the other hand, only 10 enterprises of the first group with percentage 19% compared to 16 enterprises of the second group with percentage 39% have low added value. As well as, two enterprises only from the first group with percentage less than 4% have negative added value, whereas this ratio increased to reach 22% (9 enterprises) in case of enterprises whose owners gained experience through inheritance from one generation to another.

On the other hand, it is noticed that education, despite its vital importance did not play the expected role in enhancing SMEs and granting them with the required experiences. Thus, it can be evidently clear that, the numbers of the owners of the enterprises, who acquired their experience from technical schools, did not exceed more than 2 cases. However, these two cases have accomplished relatively high added value, the fact that emphasizes that technical education plays a vital role in the success and sustainability of small industries.

However, it is worth mentioning that there always exist the probabilities of success as well as failure, even in the presence of the required training and qualifying for owners and employees. This fact justifies the success of some enterprises with high and medium added values despite the absence of the training and experience, and the failure of others in the present of this experience. But the probability of success in the first case will be extremely more than in the second case.

### 5.3.3 Relationship between the existing work' safety conditions of and SME sustainability

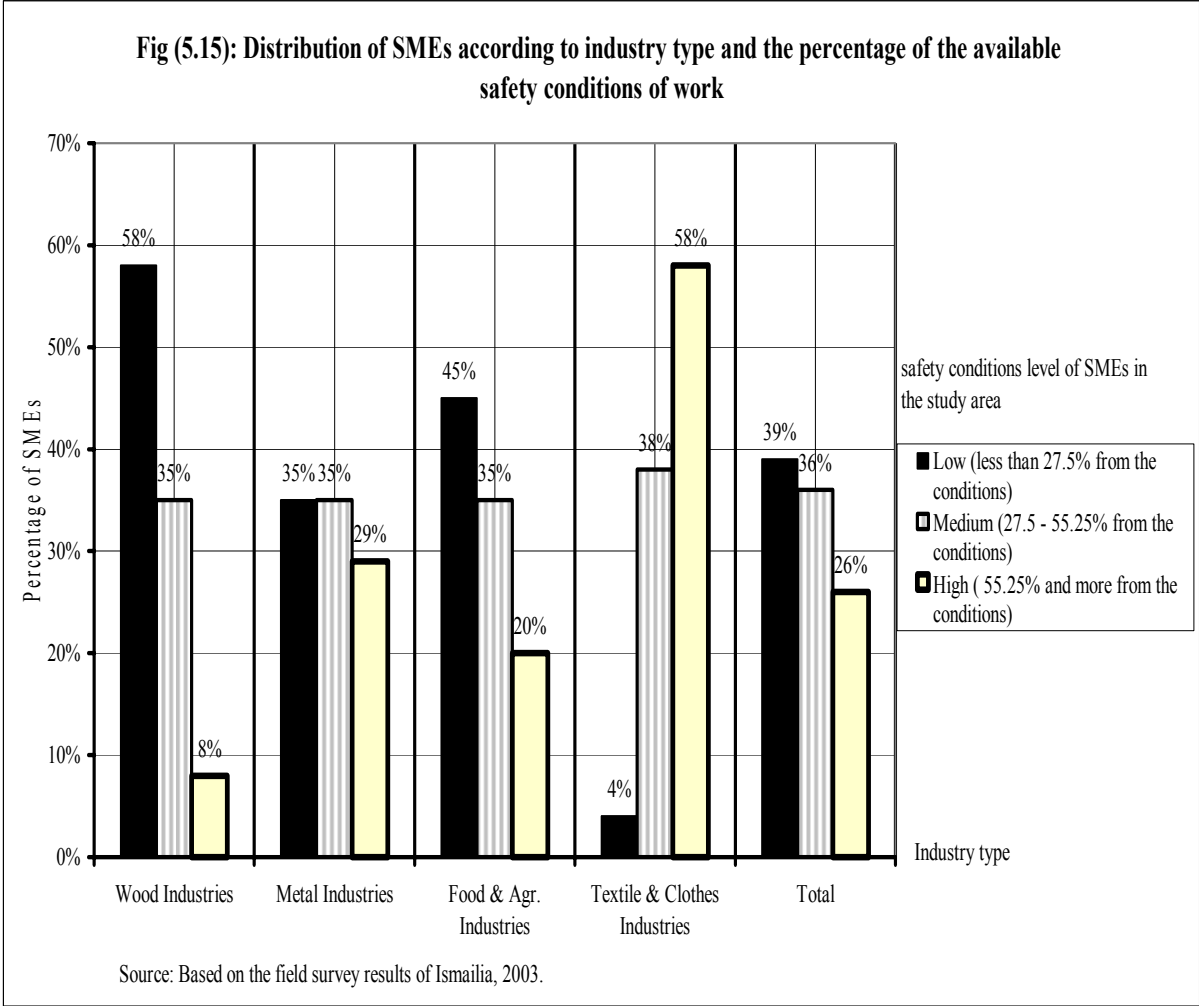
The research has allocated several enterprises in the study area, which has specified twelve security conditions to protect all their employees against work accidents. However, the number of security measures that have to be available vary according to the type of industry: some need twelve as metal industries, others need only 11 security means such as wood industries, some need 10 such as food and agriculture industries, and others need 7 only such as textile and clothes industries. See Photo (5.1). However, seven of these conditions should be available in all types of enterprises which are as follows: special work gloves, first aid, fire extinguisher, air withdrawal, ceiling fans, natural ventilation, and employees ' uniforms. These means include other conditions in case of food industries as: head cap, protector for breathing, and special shoes. In case of wood industries these conditions should also include: ear protector, while in the metal industries, the worker would also need special safety glasses to protect his eyes and face from sparks of machines.



Photo (5.1) shows some artificial safety conditions of SMEs in the study area (Ismailia governorate)



It is worth mentioning that the Egyptian labour law does not authorize any manufacturing enterprise (registered) without completing the requirements of manufacturing security. However, many enterprises evade the law and initiate their activities without fulfilling these requirements; especially that many of the owners of such enterprises do not feel the importance of these means of manufacturing security for the enterprise as they are very expensive. Therefore, they provide only some of these means at the beginning of the activity. Afterwards, they move these means from the place of work or resell them again. The field survey specified a percentage not less than 39% from the enterprises in the study area provides not more than 27.5% from means of security. As well as a percentage of 36% form the study sample provides between 27.5% - 55.25% from the means of security. While a percentage not more than 26% from the study sample provides 55.25% and more from means of security related to the enterprise. See Fig.( 5.15).



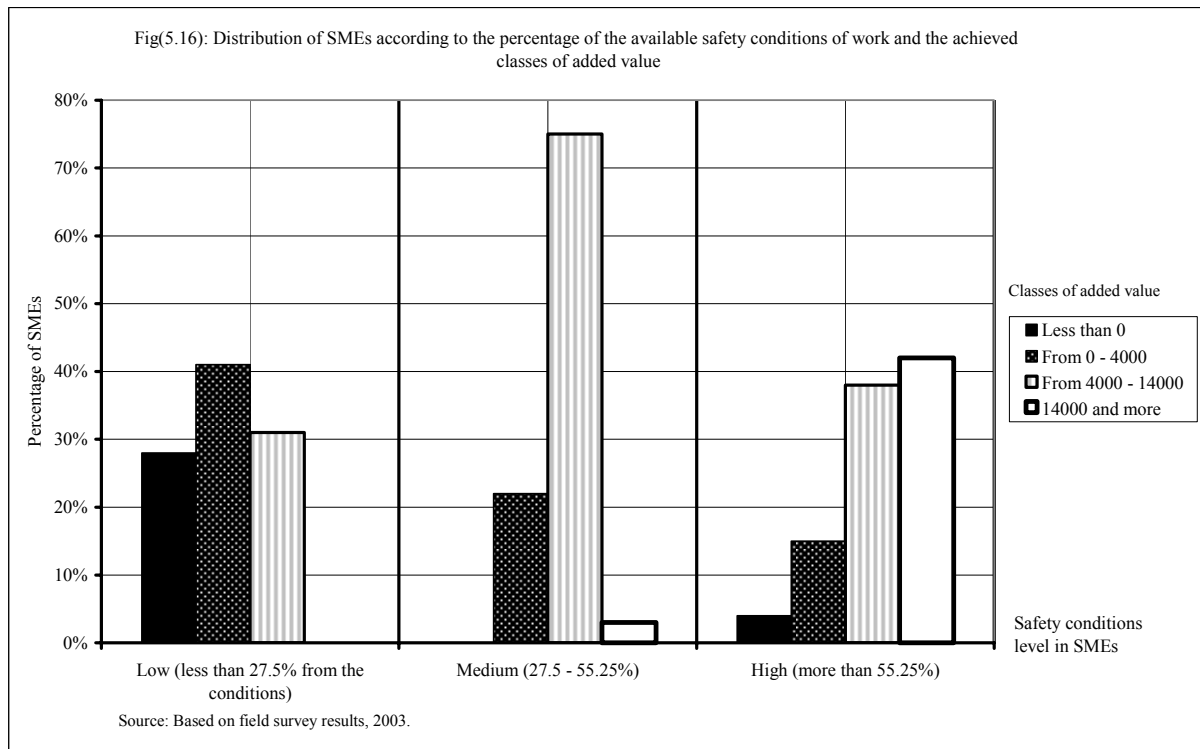
The least required security means available in the enterprises reached 8% from the required percentage, as found in one SME in metal industries sector. The highest percentage of the available security means reached 83% from the required conditions, which was also found in one SME in the same sector. Furthermore, throughout the field survey, it is evidently clear that many enterprises in the study area don't have the basic conditions of work such as: natural ventilation and lighting and fire extinguisher. Besides, other enterprises don't have, in addition to what was previously mentioned, first aid or any of the other means which protect the labour during his work such as eye glasses, especially in metal industries field, or head caps, or even the protective work gloves.

Accordingly, the question that need to be answered now is does the negligence or the unavailability of means of manufacturing security can negatively affect or threaten the success of the enterprise or not? Theoretically, the answer is yes, as not providing these means for the labours during their work might expose them to many dangers. See Photo (5.2). Consequently, the enterprise would lose all their physical effort, the fact that would negatively affect the production process as well. Moreover, not providing healthy environment for the employees from natural ventilation and lighting may reduce the production capability of employees . Furthermore, non existence of fire extinguisher may destroy the whole enterprise if there has been a fire for any reason. Therefore, the availability of the security measures theoretically does have serious impacts on the success and the sustainability of the enterprise. In order to verify this fact practically, the relationship between the availability of the security measures and the added value has been examined, as shown in Fig (5.16).



**Photo (5.2): The absence of industrial safety conditions threatens the enterprise and the employees' health**

It is evidently clear from figure (5.16) that all the enterprises that have provided most of the required security measures, have accomplished high added value. The enterprises that have provided about 55.25% and more from the required security measures for the labours reached a high added value (more than 14000 LE) in about 42% from the total number of enterprises in this group. Wherein, 19% of enterprises had a small or negative added value, while 38% of the enterprises in the same group reached medium added value (4000-14000 LE). On the other hand, the enterprises that have provided a percentage ranging from (27.5-55.25%) from the required security measures, have also reached high added value, but in only 3% from the total number of enterprises in this group, whereas those with medium added value have reached 75%, and those with low added value (less than 4000 LE) have reached 22 % from the total number of enterprises.



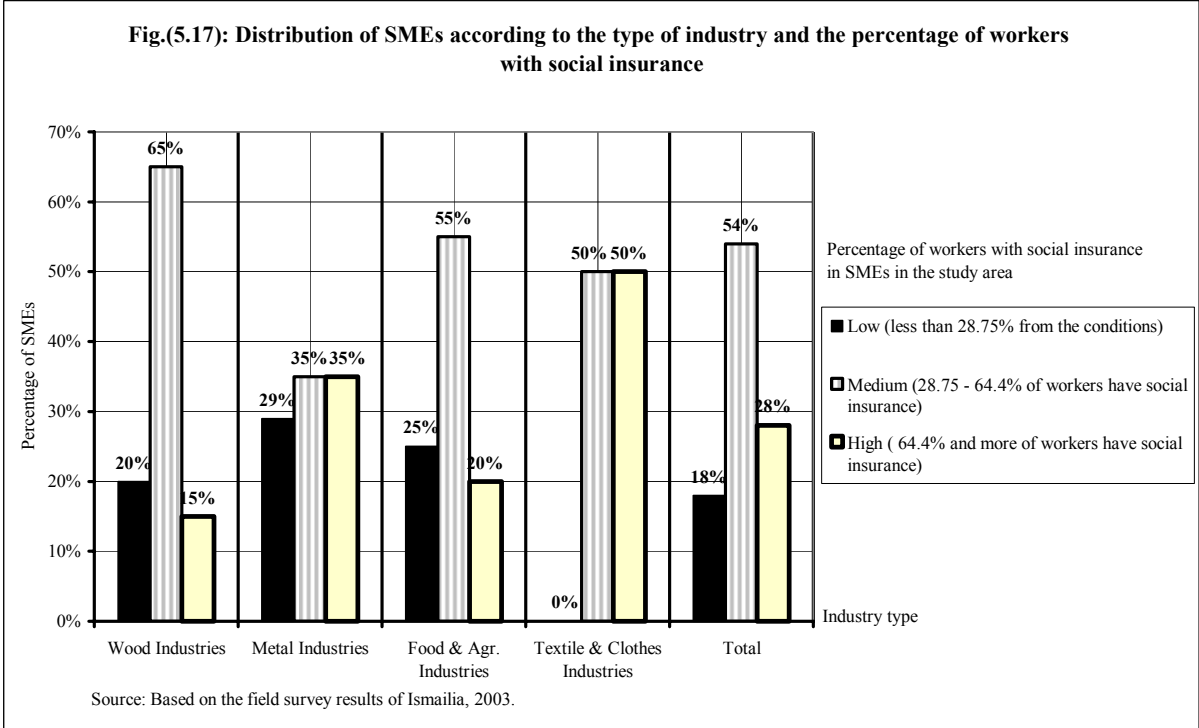
As for the third group that provides less than 27.5% of the required security measures, 28% of these enterprises have negative added value, whereas 41% of the enterprises in this group have small added value, and a percentage not exceeding 31% have medium added value. It is also worth mentioning that the field study has clearly indicated that none of the enterprises categorized in this group have high added value. This refers to the clear determination of the vital importance of the role of the security measures for the enterprise and its labours in driving it towards success and sustainability, in comparison with those enterprises that do not recognize the vitality of this important factor in their plans.

#### 5.3.4 The relation between social insurance of employees and SMEs sustainability

The social insurance for the labours is not less important than the work protection, as both are vital for the success of the enterprise. Thus, the last insures the physical protection for the labour, while the first ensures his psychological welfare, stability, and reduces his fear from future. This ultimately enhances his capability of concentration and creativity in work. The research thus highlights the fact that the enterprises that provide social insurance for their labours are those who are likely to succeed. However, this factor hardly exists in the study area as most of these enterprises do not even consider facilitating that factor as declared by the labours interviewed during the field work survey. They clearly stated that the social insurance is only one of the formalities in front of the local authorities that produce the activity license. In broad terms, the enterprise owner pays for the social insurance for only a small number of the labours in the enterprise including him, without stating the real salaries, in order to ensure less payment. Furthermore, the social insurance validates the labours' right to earn a part of his salary on retirement or in case of any hinders that prevents him from working, however, this does not include the health insurance that he has to bear himself.

The field study has clearly indicated that 28% from the enterprises in the study area provides social insurance for 64.4% and more for their labours. The highest percentage of labours having social insurance reached 83% in one of the metal industries' enterprises. Whereas a percentage not less than

54% of SMEs in the study area provide social insurance for a percentage of their labours ranging from 28.75-64.4%, while a percentage of about 18% of SMEs provide social insurance for less than 28.75 of their labours. The least percentage of labours having social insurance reached 8% in the study area, as was indicated in one of the metal industries' enterprises. It is worth mentioning that textile industries have the highest percentage of labours having social insurance, as 50% of these enterprises provides social insurance for more than 64.4% of their labours, followed by metal industries, and then food industries, whereas the wood industries come at the last. See Fig. (5.17).

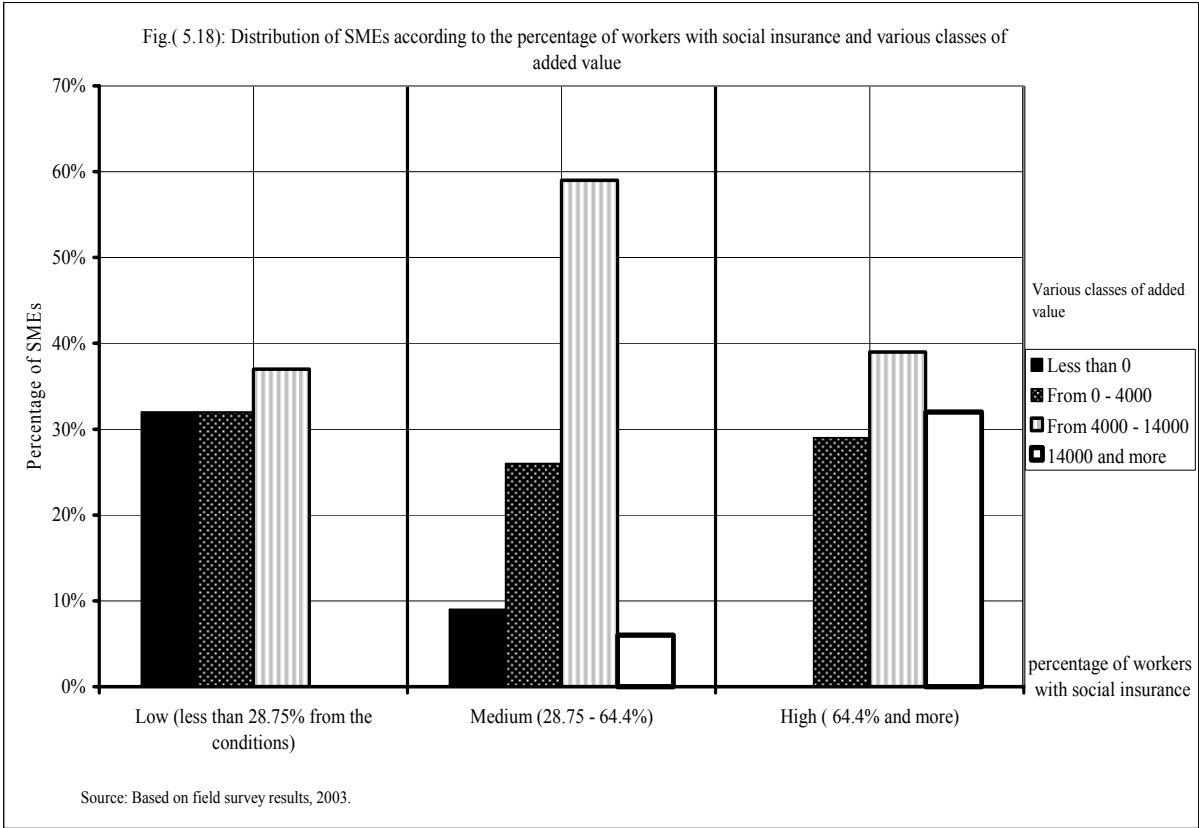


Despite the degradation of the social insurance among studied small-scale industries, the remaining question is still: what is the relation between the ratio of worker with social insurance and the success of such SME? And what is the impact of the social insurance within a society of SMEs where the culture of insurance is almost absent? The success and sustainability of enterprise can be measured through the added value and frequency of problems facing SMEs. The first point of view is that the enterprises providing social insurance for a higher percentage of their labours are more ready to succeed and prove their existence on the long run, and encounter fewer problems in comparison to others. The result of this analysis can be clearly illustrated in the Fig (5.18) indicating the relationship between social insurance and added value, and also in Fig (5.19) indicating the relationship between social insurance and amount of problems that the enterprise suffers from.

Fig (6.18) clearly indicates the enterprises that provide social insurance for 64.4% and more of their labours have accomplished high added value (14000 LE and more/year), in 32% of the enterprises categorized in this group. Whereas a percentage not less than 39% of the enterprises in this group have medium added value (4000 - 14000 LE annually), while a percentage not exceeding 29% have accomplished low added value (less than 4000 LE annually). And it is worth mentioning that none of the enterprises categorized in this group have negative added value.

As for the group of enterprises providing social insurance for a percentage of their labours ranging from (28.75 - 64.4% of their labours), it was found that only 6% have reached high added value. Whereas 59% of this sample have medium added value, and about 26% of this group have low added value, and only 9% have achieved negative added value. On the other side, the enterprises that provide social insurance for less than 28.75% of their labours have reached medium and low added value in 37%, 32% in this sample respectively. Whereas a percentage reaching 32% of these enterprises have negative added value, and none of the enterprises categorized in this group has high added value.

Consequently, this clearly indicates that the enterprises that provide social insurance for a high percentage of their labours have more opportunities to succeed and prove their existence on the long run. This was clearly illustrated by the high percentage of the enterprises having added value categorized in this group, in comparison with those having low or negative added value in the same group. However, it is worth mentioning that the social insurance system in SMEs field needs a lot of development, to ensure safety and psychological stability for the labours, and would consequently; enhance the labours' capability of innovation and creation. This can be achieved through organizing periodical courses for the enterprises' owners to draw their attention to the vital role of the social insurance in the success and the sustainability of these enterprises.



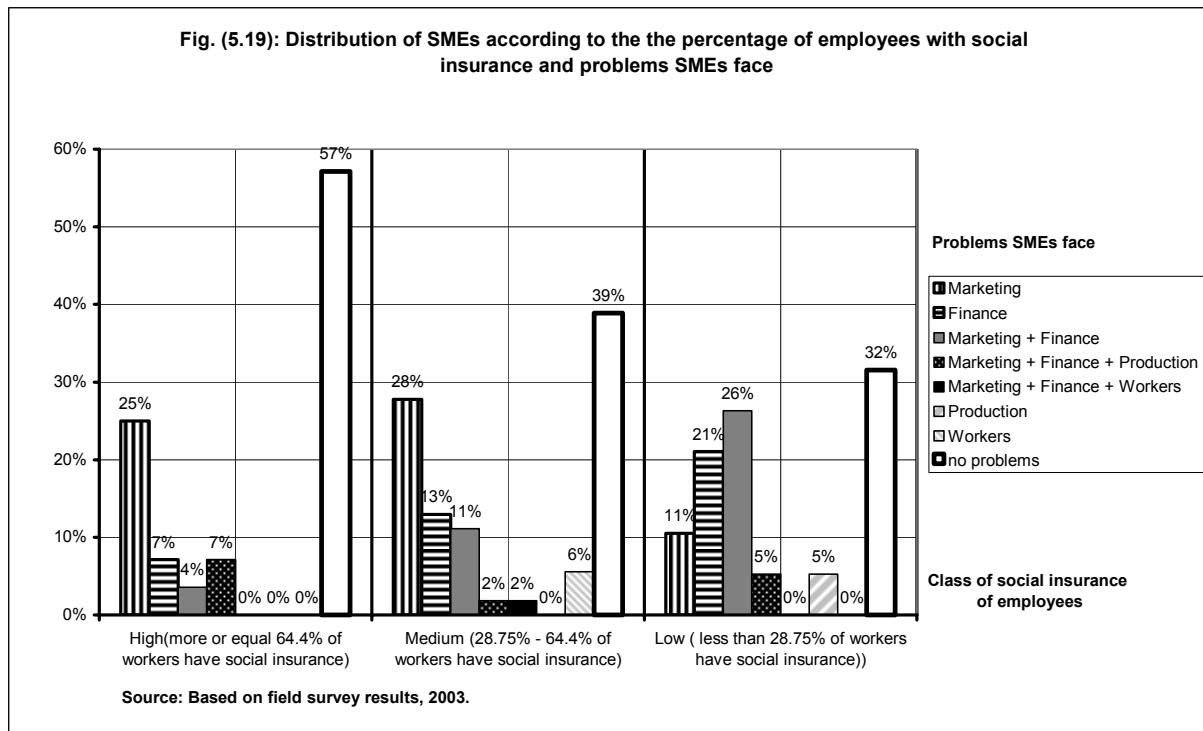
In general, despite the absence of a clear policy for the enhancement and the development of the small industries' sector, and the lack of the scientific and technical consultancy, the field study has clearly indicated that there is direct relationship between social insurance and stability for the labours and added value for the enterprise, although not clearly illustrated at the present time, but it does exist.

Fig (5.19) illustrates the relationship between the social insurance for the enterprises' labours and the degree of stability of the enterprise represented by less number of problems existing in the enterprise. Thus, this figure clearly indicates that the enterprises providing social insurance for 64.4% and more for their employees have fewer problems and can be generally considered more stable. This can be illustrated by the fact that 57% of the enterprises categorized in this group do not suffer from any structural problems in the production system at all. Whereas the percentage of the enterprises suffering from serious composite problems in (financing and marketing) or in (financing, marketing and in production process), did not exceed 4% and 7% respectively. As for the enterprises suffering from simplex problems in marketing and financing has reached a percentage of about 25%, 7% respectively.

On the other side the enterprises providing social insurance for a percentage of their employees ranging from (28.75% and 64.4%) follows that group in accordance to their degree of stability and exposure to problems. As 39% of the enterprises in this group do not suffer from any structural problems in the production process, whereas the percentages of the enterprises suffering from serious composite problems (marketing, financing and employment, or marketing, financing and production, or marketing and financing only) reached 2%, 2%, 11% respectively. While the percentages of the enterprises suffering from simplex problems as (employment, financing and marketing) have reached 6%, 13%, 20% respectively.

As for the third group providing social insurance less than 28.75% of their employees , suffer from largest number of problems, as the percentage of the enterprises not suffering from any problems reached 32% from the enterprises categorized in this group, whereas the percentage of the enterprises suffering from complex problems (marketing, financing and production, or marketing and financing) have reached 5, and 26 % respectively, while the enterprises suffering from simplex problem(production, marketing, or financing) have reached percentages about 5%, 11%, 21% respectively.

This proves to a great extent that social insurance undoubtedly plays a positive role in reducing the number of problems from which the enterprises suffer and makes them more stable. Some enterprises may face simplex or complex structural problems in the productive system, although a high social insurance for labours is provided as has been indicated in 43% of the sample of the enterprises in the first group. This can be justified by the presence of other factors which affect the degree of the enterprises' stability and exposure to problems, which can be attributed, as was previously elaborated, to the lack of the precise analysis for the market dynamisms and the clear identification for its requirements. In broader terms, the lack of coordination between the small enterprises, which always perform individually, does not enhance them with the required comprehensive overview for the market dynamisms and requirements.



### 5.3.5 Summary

The aim of this section was to examine the sub-hypothesis stating that small industries provide job opportunities for low-qualified labourers without providing the appropriate social insurance and the means of manufacturing security. This, consequently, limits their chance for success and sustainability in the long-run. In order to examine this hypothesis, the effect of the social constraints on the sustainability of the small industries has been measured; the social constraints represent the independent variable which can be expressed through the following factors: 1- Standard of education for the labourers; 2- Prior experiences and training acquired by the entrepreneurs; 3- Providing the means of manufacturing security in enterprises; 4- The percentage of labourers who having social insurance inside the SME from the total labourers. Whereas, the capability of the SMEs to succeed and exist in the long-run represents the dependent variable which is also expressed through the following factors: 1-The level of the added value which the enterprise accomplished; 2- The problems facing the enterprise.

This study has revealed that there are many social variables and constraints that affect the production system of the small industries thereby limiting their contribution to sustainable regional development. Overall, SMEs offer job opportunities for somewhat rather low-skilled/semi-skilled employees. Typically, these entities do not provide suitable social insurance for their employees; nor do they ensure sufficient manufacturing safety measures are present during production. In the long-run, the continuation of such practices will threaten the future of these industries and, as a result, sustainable regional development.

Accordingly, the research has deduced that SMEs in which there is a high percentage of illiteracy among their labourers have accomplished smaller degrees of added value than those with a low illiteracy percentage. Moreover, many enterprises from this group (36%) are threatened to be drawn out of enterprises and have negative added value. In broader terms, they are experiencing severe financial problems that small industries enterprises cannot bear. On the other hand, the enterprises

whose labourers are qualified with higher and technical education levels accomplished positive high added value. The percentage of the enterprises which accomplished high or medium added value in this group reached 94% against only 3% with negative added value. This emphasizes the fact that enterprises whose labourers are qualified with higher and technical education level have broader opportunities to succeed and survive than others which do not have the same privilege.

Generally, the research has also concluded that education is not the only dominant factor that guarantees the success of the enterprise, as prior experiences and training play an important role as well. This can be indicated by the existence of some enterprises that accomplished low or medium added value despite the high percentage of the illiteracy among their labourers.

It is evidently clear also from the analysis of the relationship between entrepreneurs; experience and the capability of the enterprise to succeed and survive, that the enterprises whose entrepreneurs gained their experience from similar enterprises or through training in training centres have accomplished high and medium added value in about 77% of the enterprises categorized in this group. The enterprises, whose owners gained their experience through inheritance from one generation to another, accomplished high and medium added value in only 39% from the cases categorized in this group. This means that training and education specifically the technical one are considered the basic fundamentals essential to guarantee the success of the small industries' enterprises, and direct them towards the path of sustainability.

Concerning the means of industrial security provided by the enterprise for the employees, it has been clarified that SMEs suffer from ignoring this factor in the productive process. It has been illustrated that 74% of the enterprises in the study area provide less than 55.25% of the required security measures related to the enterprise. It is worth mentioning that the presence of these measures in enterprises have positive impacts on the success and sustainability of the enterprises. In addition, it has been indicated that the enterprises which provide 55.25% and more of security measures have accomplished high added value in almost 42% of the enterprises. Whereas those categorized in the same group with negative added value have reached only 4%. On the other hand, the enterprises which have provided low security level for their labourers (less than 27.5% of the security measures) accomplished negative added value in 28% of the enterprises in this group. This ultimately threatens the enterprises with failure, bankruptcy and would definitely draw them out from enterprises.

Concerning the social insurance which the enterprise provides for its labourers, it has been clearly indicated the degradation of this insurance and it can hardly be effective for two reasons. It is provided only for a limited number of the employees, and besides, it is considered to be one of the formalities to obtain the activity license from authorities. Moreover, the actual salaries are not adequately stated, instead they state only categories with low salaries. So the enterprises' owners won't be obliged to pay more for social insurance. In addition, the social insurance also does not include health care but it is only granted during the retirement period, or in case of any hinders or accidents during work.

Although the insurance level on employees is low, the absence of this factor negatively affects the labourers' production and threatens the success of the enterprise as a whole. As it has been illustrated from the analytical study that, the enterprises, which have social insurance for 64.4% and more of their labourers, accomplished high and medium added value in 71% of the enterprises categorized in this group. While none of the enterprises in this group have accomplish negative added value. Whereas the enterprises providing social insurance for less than 28.75% of their labourers accomplished negative



added value in 32% of the cases in this group. In addition, it has been indicated that the enterprises which provides social insurance for a high percentage of their labourers do not suffer from any problems in 57% of the cases included in this group. While those providing social insurance for lower than 64.4% of their employees, suffer from structural problem in their production process, either simplex or complex problems, in almost 68% of the cases categorized in this group.

Generally the probabilities of success and failure are always thinkable in all enterprises, whether in case of the enterprises providing social insurance, manufacturing safety measures and the required training and experiences, besides the high level education of their employees , or those ignoring these factors. Therefore, we sometimes find the enterprises categorized in the first group might be threatened with failure, whereas, enterprises in the second group accomplish a great success and capability to go on. However, the dominating result should be reviewed in accordance to the percentage of success and failure in the two groups. As the probability of success for the first group is much greater than that in the second group, and vice versa.

Accordingly, the research emphasizes the fact that employees are considered human capital and, as such, one of the basic resources in this enterprise sector whose importance is just as great, if not more so, as the fixed or working capital. An enterprise must make the best use of the funds available for investment, as well as the available human resources in order to obtain maximum benefits. This means investing in human capital through the provision of suitable social insurance and relevant manufacturing security measures. In addition, and in order to guarantee high production quality, the labourers must be specially trained by industry-specific training centres. This would ultimately enhance the capabilities of SMEs for innovation and facilitate their ability to respond to new market demands and requirements. However, given the cost of human resource investment, small industries cannot be expected to bear these costs in their entirety as an individual responsibility. Instead, cooperation needs to occur between all SMEs, each within its own field of specialization and expertise, and the appropriate governmental authorities; this is the key element needed to better emphasize the role of these small industries in the socio-economic developmental process throughout the country.

#### **5.4 Environmental constraints SMEs face towards sustainability**

This section aims at analyzing the third dimension of sustainable development represented by the environmental dimension. This element is almost ignored when studying small industries as there is a belief that as long as environmental impacts are limited, these impacts will have a limited effect on the environment. This belief is very common among developing countries compared with the beliefs held in developed countries. However, the existence of a large number of small industries and their widespread geographical influence within a region increases the possibility of substantial negative environmental effects generated from raw material consumption, energy usage and resulting wastes. Specifically, it can be stated that the absence of an ecological efficiency element from the production process increases the ecological risks which SMEs may cause. The term "ecological efficiency" refers to rational energy consumption and raw material usage; the utilization of the lowest amounts of energy and raw materials necessary given production needs; and provision for recycling of solid wastes to obtain additional raw materials for other production processes.

Therefore, this section aims at examining the sub-hypothesis which states that the production processes in the field of SMEs results in higher ecological risks because of the lack of ecological awareness as demonstrated by the overuse of raw materials, energy and absence of production

mechanism controls and monitoring systems. From this view, the degree of ecological awareness will be examined by surveying and documenting the methods with which these enterprises deal with energy consumption during the production process. In this field, the amount of resulting waste from manufacturing will be also analyzed and compared to the amount of raw materials utilized in the manufacturing process. In addition, the handling of solid and liquid wastes, as well as the frequency of machinery and equipment maintenance, will be discussed. The following contains the most important results deduced from this research concerning this analysis.

#### **5.4.1 SMEs and energy consumption in the productive process**

There is no doubt that rationalizing the energy consumption is one of the designated goals of sustainable development. In addition, the dependence on renewable energy such as wind or solar energy is considered one of the basic issues which the sustainable development is seeking to widely merge in the productive process. Concerning SMEs especially in the developing countries, the renewable energy is considered as an extremely challenging task, especially with the increase in the costs required for producing this kind of energy in comparison with the volume of production of these enterprises. As well as, due to the individual performance of these SMEs and the absence of their spatial agglomeration or their co-operation to sustain the same activities, it is difficult for a developing country to provide this type of energy in this case.

In general, small industries in Egypt depend on common sources of energy such as (electricity, solar, benzene, gas) which causes the emission of polluted gases in the surrounding atmosphere. Also there are some manual or handicraft industries which mainly depend on manual work. They do not need to use energy except in lighting such as some agricultural industries which depend on date palm leaves midribs. Generally this topic aims at analyzing the existing relationship between the consumption of energy and water use for industrial process and the volume of production in the other side. The first will be represented by the cost of operating and the second by the price of the final products.

The results of this analysis have clarified that 22% of the enterprises in the study sample consume large amounts of energy in comparison with the volume of their production, as the cost of energy and used water in the productive process constitutes almost 1.13% and more from the price of the final products annually in these enterprises. It should be also indicated that the highest cost of energy consumption reached 2.96% from the price of the final product. This percentage has been documented in one of bread ovens (food industries).

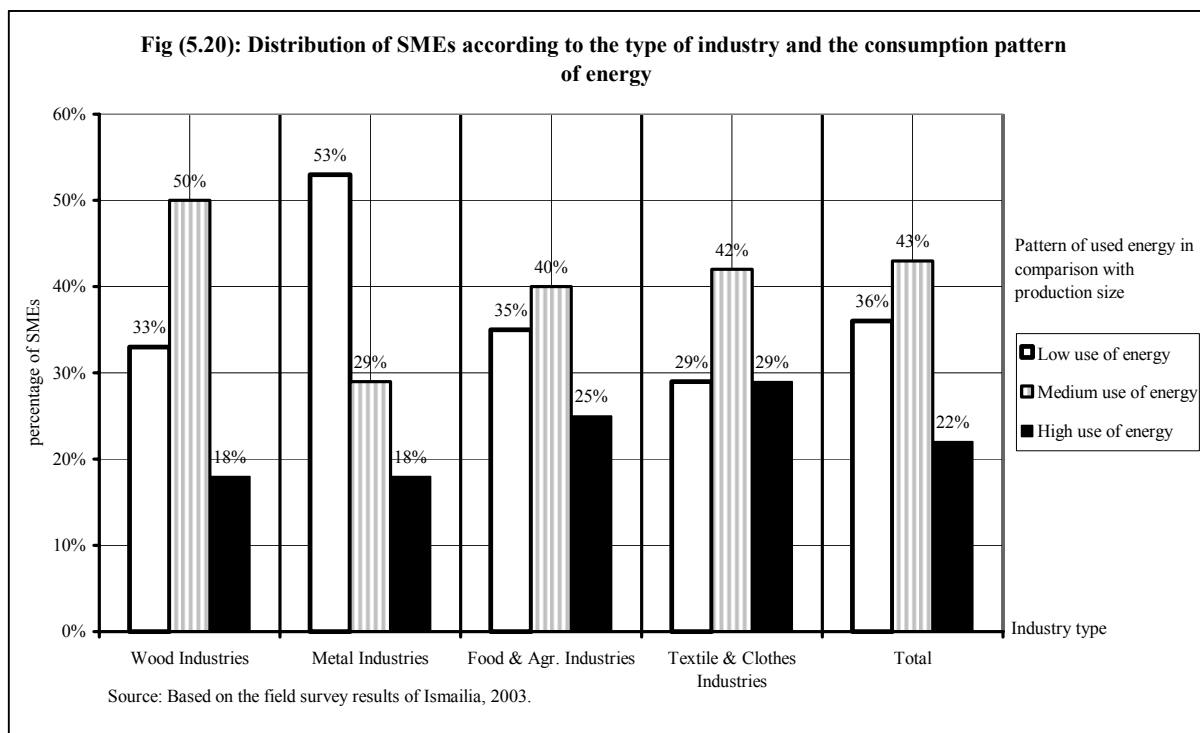
On the other hand, the percentage of SMEs with medium consumption of energy in comparison with the size of production is 43%. The average costs of energy and used water during one month ranged between 0.4% - 1.13% of the value of the final products in SMEs in the study area. While SMEs, which are using energy with rational way in comparison with the size of their production, reached 36% of the number of enterprises in the study area. The costs of energy consumption in this group are estimated by less than 0.4% the value of the final product during one month.

It should also be taken into consideration that the lowest energy consumption in comparison with the volume of production reached 0.03% only. This percentage has been documented in one of the enterprises of palms leaves midribs industries (agricultural industries). On the other hand, the metal industries are on the top of the lowest energy consumption industries in comparison with the volume of production. While textile and clothes industries are on the top of the highest energy consumption enterprises in comparison with the volume of production as it is shown in Fig (5.20).

The question now is what makes some enterprises consume more water and energy than others? Is it dependent on the education level of employees in the enterprise? Or is it due to the lack of production supervision from responsible officials? Does the scale of the enterprise play any role in this issue; in broader terms, the enterprise with more employees is better organized than others? Or the enterprise with less labours consumes less energy as there is more production control in comparison to others? That is what we are going to clarify in the following lines:

From the field study results, it is clear that 61% of the SMEs whose employees have attained technical education and high are classified as highly rational SMEs in terms of consumption of energy. While 29% of the enterprises consume medium level of energy, no more than 10% of SMEs are characterized by irrational energy consumption. As the enterprises whose most of employees attained medium levels of education, 63% of SMEs in this group are categorized among medium levels of energy consumption, while 16% are characterized with irrational levels of energy consumption, whereas 22% of these enterprises are characterized by rationalized energy consumption.

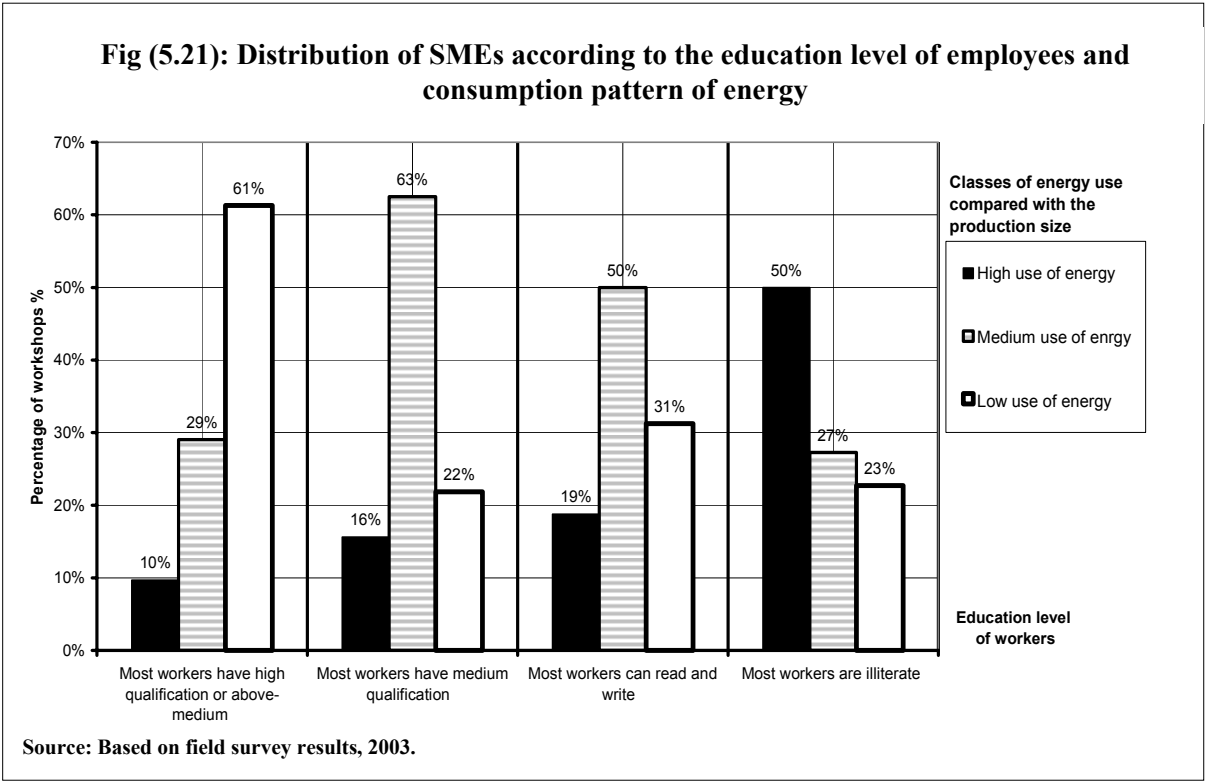
On the other hand, it is indicated that the enterprises whose employees can hardly read and write, have high levels of energy consumption with a percentage reaching 19% of the total enterprises in this group. While the percentage of enterprises of medium levels of energy consumption reached 50%, whereas the percentage of enterprises of rationalized energy consumption in this group reached 31%.



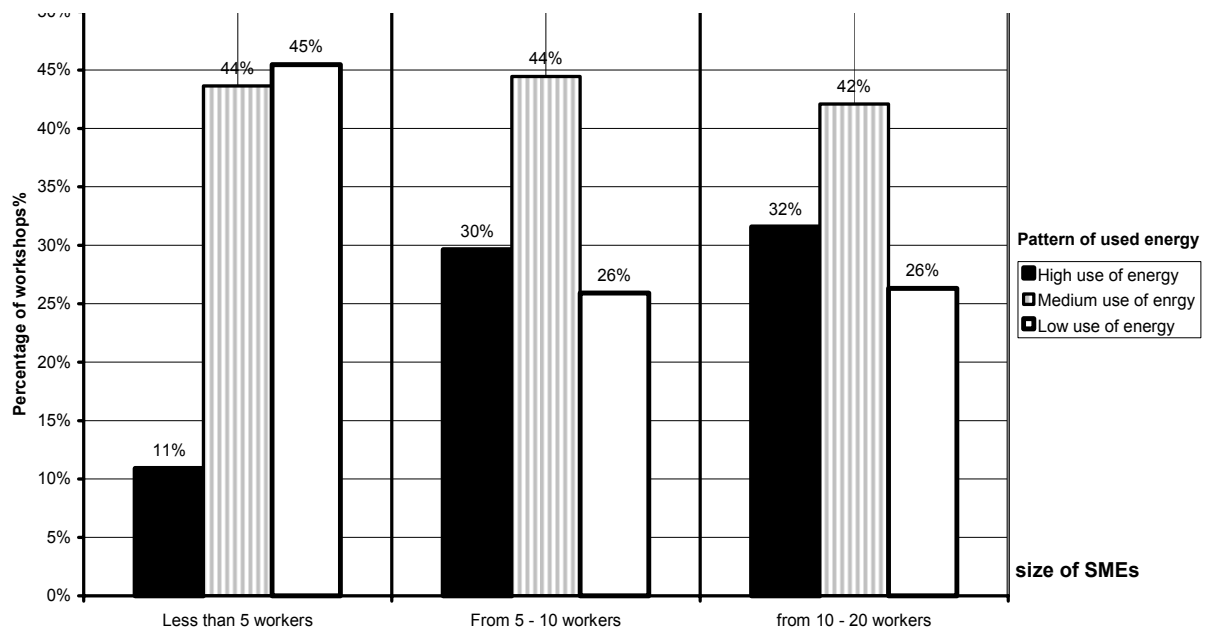
In case of enterprises whose most of their employees suffer from illiteracy, we noticed that there is an increase in the percentage of irrationalized energy consumption level among the enterprises in this group that reached 50% of their total number. While the percentage of the enterprises of medium levels of energy consumption reached 27% and the percentage of enterprises of rationalized energy consumption reached 23% as it is shown in Fig (5.21). Thus, there is direct relationship between the level of employees' education and the rationalization level of used energy. However, we cannot state that when the level of employees' education increases, the rationalization of energy consumption

increases consequently. Thus, some SMEs in the study area, their employees do not have medium or higher education, succeeded in achieving a high level of rationalization of energy consumption. This emphasizes the fact that there are other factors affecting the energy consumption pattern such as the size of the enterprise or the number of employees in the enterprise.

Fig (5.22) shows that SMEs whose number of employees is less than 5 persons are the most enterprises consuming the energy by rationalization way. As 89% of the enterprises in this group are using low or medium levels of energy. SMEs which are consuming high energy in this group do not exceed 11%. However, in case of the SMEs with larger number of employees ranging from (5-10) or from (10 - 20) employees, the levels of energy consumption in the two groups are nearly the same. As, the number of the enterprises, using low or medium level of energy, reached 70% and 68% respectively. While the percentage of the enterprises which uses high level of energy reached 30% and 32% respectively.



**Fig (5.22): Distribution of SMEs according to the size of enterprise and consumption pattern of energy**



Source: Based on field survey results, 2003.

#### 5.4.2 SMEs - pattern of used raw materials

The pattern of used raw materials in SMEs is a good indicator for their awareness about the environmental dimension in the manufacturing processes. Undoubtedly, the dependence on renewable raw materials in industry conserves the resources and preserves the rights of the coming generations in these resources. On the other side, the dependence on non-renewable resources threatens the future of the coming generations, and their rights in utilizing these resources. The used pattern of raw materials and their transportation way to the manufacturing locations are considered as indicators for SMEs' environmental awareness. As long as SMEs depend on renewable natural raw materials from the surrounding local areas, they will ultimately help in the preservation of the natural resources and will decrease the stresses on the environment. While in case of dependence of these industries on imported raw materials or those brought from the national market, it would impose more burdens on environment.

In the study area, there are 5 basic types of raw materials used in industry; the first type is the renewable natural raw materials brought from local market. This is absolutely the best type that agrees with the basic fundamentals of the sustainable development and the preservation of the environment. The enterprises which depend on this type of raw materials represent 10% from the total number of the enterprises in the study area. The second types of raw materials utilized, arranged according to their enhancement for environment preservation, are those brought from the national market. The enterprises utilizing these raw materials constitute 4% of the total enterprises in the study area.

Whereas the enterprises depending on raw materials locally manufactured reaching 13% from the total enterprises in the study area comes in the third position (enterprises with intermediate impact on environment). This is followed by the enterprises of large negative effect on environment. They are those depending on manufactured materials brought from national market, constituting about 44%

from the total enterprises in the study area. And at last, the enterprises with extended negative effect on environment mainly depend on imported raw materials. They reach 29% from the total enterprises in the study area. Table (5.3) and Fig.(4.5) show the classification of small industries in the study area according to the raw materials utilization pattern.

**Table (5.3): Distribution of SMEs according to type of industry and pattern of used raw – material**

Branches of SMEs	Pattern of used raw - material										
	Natural, renewable and local		Natural and renewable from the national market		Locally fabricated		Fabricated at the national market		Imported		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
<b>Wood Industries</b>	0	0	2	4	0	0	12	25	34	71	48
<b>Metal Industries</b>	0	0	0	0	11	39	16	57	1	4	28
<b>Food &amp; Agr. Industries</b>	10	31	3	9	7	22	7	22	5	16	32
<b>Textile &amp; Clothes Industries</b>	4	13	0	0	0	0	26	87	0	0	30
<b>Total</b>	14	10	5	4	18	13	61	44	40	29	138

Source: Based on field survey results, 2003.

It is worth mentioning that woods and furniture industry take their place on the top of the enterprises list which depends on imported materials as the percentage of such enterprises reached 71% from all of SMEs in this branch in the study area. They always claim that the local alternative does not exist and if it is found, it does not possess the same qualifications of the imported one. In a special study by Centre of Development of SMEs and Developing the Local Technology, Faculty of Engineering, Ain Shams University, Egypt, concerning the possibility of facilitating the existence of local alternatives for the imported raw materials, it has been clarified that there is a great possibility to produce wood with the required characteristics in the industry from date palms leaves midribs, parts resulting from pruning fruit trees, wood trees planted on the water of treated sanitary drainage and reusing solid waste resulting from wood manufacturing process. More details will be highlighted in the next chapter.

#### **5.4.3 SMEs – the waste volume resulted from industry**

The volume of wastes resulting from industries is considered an important indicator to measure the ecological efficiency degree inside the enterprise. When the volume of waste decreases in comparison with the input volume of raw materials, the ecological efficiency degree increases accordingly, and the enterprise would thus be classified to be compatible with ecology. In case of SMEs in the study area, there are many factors that make it difficult to reduce the resulting waste from industry. For example, using a part of the enterprise as a storage area for raw materials makes the space of the work area inside the enterprise small. Thus, about 25% of the area of SME is used as a store for raw materials. This affects negatively the stored raw materials as they are often stored in unsuitable spaces, without enough natural ventilation and lighting, and sometimes increased humidity. See Photos (5.3 and 5.4). This threatens their value for use in the manufacturing processes.



**Photo (5.3): Storing the raw-materials in unsuitable spaces, without enough ventilation, lighting and the oldness of used equipment as well as the smallness of work space, causes loss of a big ratio of raw materials**



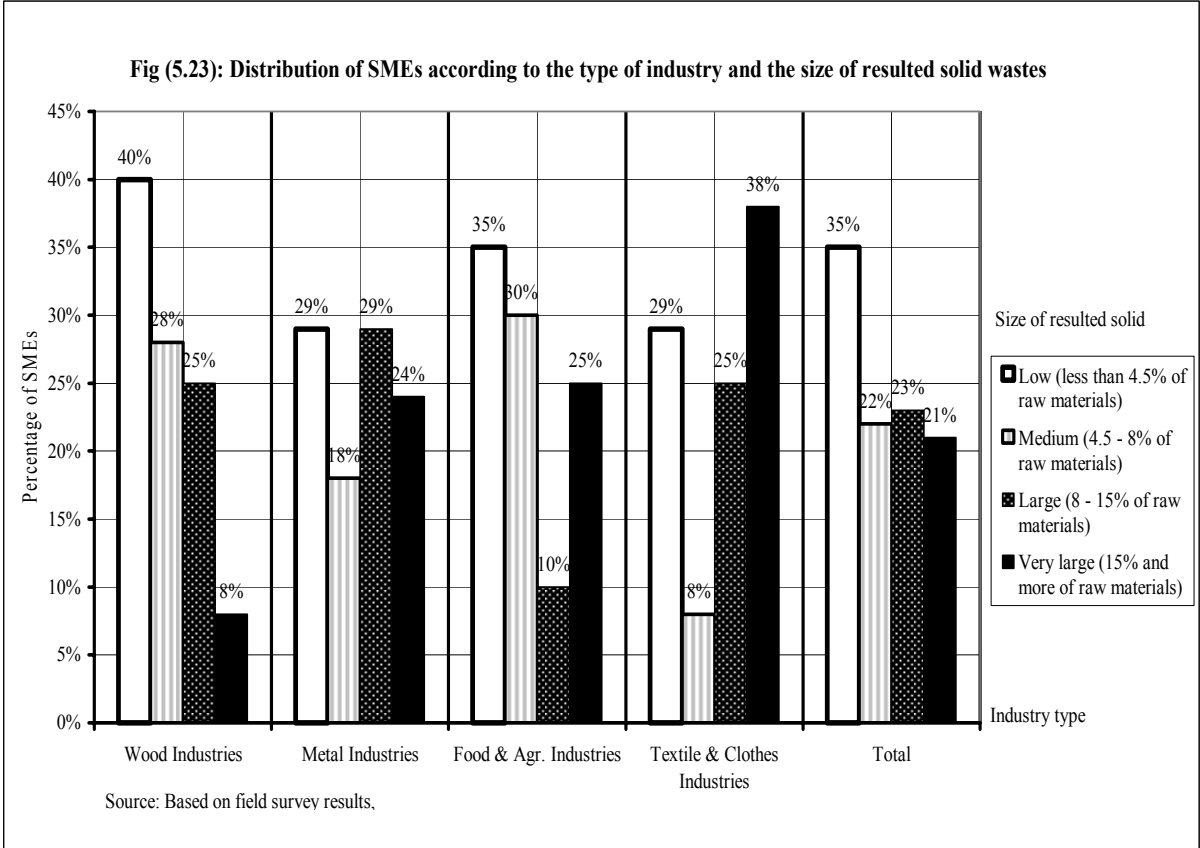
**Photo (5.4): Big amount of raw materials and solid wastes, beside one SME of metal enterprise in the study area, is wasted.**

One of the other reasons, which hinder the exerted efforts to reduce the resulting wastes, is the machines being used in the productive process and their periodical maintenance. As it is known that the machines maintained periodically by specialized experts perform more efficiently, in comparison with those not maintained periodically or maintained by non-specialists. Therefore, their productive capability decreases, together with the increase in the resulting waste in comparison with the main products themselves. From this view, this section is concerned with the analysis of the solid waste phenomenon resulting from the manufacturing process and how to deal with them in accordance to the concept of ecological efficiency. As well as, it will be attempted to understand whether machine

maintenance is playing a role in achieving this goal or not. The following gives more details from the results of the field survey.

Fig.(5.23) clarifies that a percentage of about 35% of the enterprises in the study area has high ecological efficiency level and is less threatening to the surrounding environment as its production from solid wastes is relatively low (The value of the resulting solid wastes is less than 4.5% from the costs of raw materials utilized in industry process). The value of the lowest percentage of solid wastes in this group reached 0.7% of the costs of raw materials used in industry. This has been illustrated in one SME of wooden industry. It is worth mentioning that the wooden and furniture industries came on the top of this group, while textile and clothes industries were in the last place.

The second group has medium ecological efficiency level (the value of the produced solid wastes is equal to 4.5-8% of the costs of raw materials used in the productive process) and its risks threatening the surrounding environment is relatively higher than the first group. The number of enterprises in this group reached 22% of the total SMEs in the study area. The food and agricultural industries occupied the first place in this group, while textile and clothes industries occupied the last place.



The percentage of the enterprises categorized in the third group reached 23%. They are mainly characterized by their large negative impact on ecology, which means that they have low level of ecological efficiency because of their output from solid wastes is large (the output value of solid wastes ranging 8-15% from the input cost of raw materials). The metal industries are on the top of this group, while food and agricultural industries come at last.



The percentage of SMEs, whose impact on environment is very large (output value of solid wastes is 15% and more from the input cost of raw materials used in the productive process), reached 21%. The highest percentage of solid wastes in comparison with the costs of raw materials used in productive process reached 29% in this group. This percentage was noted in one of the clothes and textile enterprises in the study area. In general, textile and clothes industries occupy the first rank in this group, while the wooden and furniture industries come on the last place. The question now is: is there a relationship between the rates of machine maintenance and the solid waste resulting from the manufacturing process?

Fig (5.25) shows that the enterprises whose machines and equipments used in the productive process are maintained periodically (daily or weekly) produce the lowest amount of solid waste. The percentage of the enterprises producing extremely large sizes of solid wastes does not exceed 2%, whereas the enterprises with large amount of solid waste were only 15%. While those with medium volumes of solid wastes reached 20%, as the percentage of enterprises with small production of solid wastes reached 63% of the total enterprises in this group.

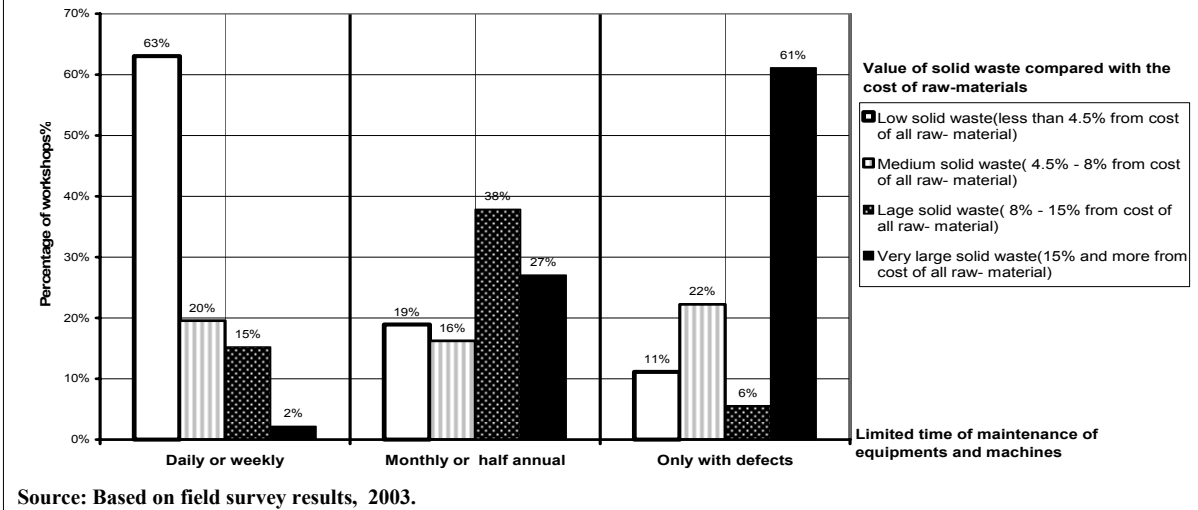
On the other hand, it is noticed that the enterprises maintaining monthly or semi-annually their used machines and equipments, produce intermediate volume of solid wastes. Thus, 19% of the enterprises in this group have low amount of solid wastes, whereas the percentage of enterprises producing medium and large size of solid wastes reaches 16%, 38% respectively. While not less than 27% of the enterprises in this group produce very large volume of these wastes.

The third group includes the enterprises which do not perform maintenance for machines and equipments unless there is a defect only. It is considered the most group threatening the environment and wasting resources, because of its production from solid wastes are relatively very large. Thus, the enterprises with small size of solid wastes in this group reached a percentage not exceeding 11%. While the percentage of the enterprises with medium, large and very large amount of solid wastes in this group does not exceed 22%, 6% and 61% respectively.

Undoubtedly, the periodical maintenance for the machines increases the machines efficiency and their production capacity in one hand. In the other hand, it helps to reduce the waste of production to a great extent. However, the experience of the responsible person for maintenance of these machines plays a great role in keeping the best capability of the machines.

Therefore, it is noticed in Fig (5.24) that there are some enterprises performing maintenance periodically for machines, yet they produce large or medium and sometimes very large volumes of solid wastes. Whereas, others perform this maintenance in case of defects only, however, they produce small volumes of solid wastes. This means that what really matters concerning the maintenance of the machines is the experience of the technician or the one responsible for maintenance. Fig.(5.25) illustrates the relationship between the volume of the resulting solid wastes and the skill of the technician responsible for the maintenance of the machines in the enterprises. Therefore, it can be concluded from this figure that the enterprises in the study area can be divide into three groups as follows:

**Fig (5.24): Distribution of SMEs according to the frequency of maintenance of equipments and machines and the size of solid waste**



**Fig (5.25): Distribution of SMEs according to responsible person for equipments maintenance and size of solid waste**



- The first group includes the enterprises depending on specialists or expert out from the SME for maintaining the machines. Obviously, it can be noticed that the percentage of SMEs producing small amounts of solid wastes does not exceed 45% of the total number within that group. While 31% of which produce average amounts of solid wastes. As for those with large and very large amounts of solid waste production, the percentage is 10%, 14% respectively.
- The second group includes the enterprises depending on specialist inside the enterprise (specialist works inside the enterprise) to maintain the equipments and machines. SMEs with small amount of production for solid wastes reaches 70% of the total number of enterprises, while the percentage of enterprises of medium and large production amounts of solid wastes does not exceed 20%, 10% of the number of SMEs in this group respectively. It is worth to mention that any of the SMEs included in that group produce very large amount of solid wastes.

- The third group includes those depending on the employees themselves in maintaining these machines. It is worth mentioning that those employees do not have sufficient knowledge and are low qualified professionally for the maintenance performance. In fact, they gained some skills in this field through experience and by trial and error. Therefore, they can only solve simple problems, but as for the complex ones, they would be ultimately unable to find the appropriate solutions for them. Accordingly, depending on employees in these cases would cause negative impacts on the production process, due to the consequent waste in raw materials, and the excess in solid wastes production. As a result, it is noticed that the percentage of the enterprises producing solid wastes of very large and large volumes in this group is very high in comparison with the first and second groups. Thus, it reaches 43%, 38% respectively, while the percentage of the enterprises which produce solid wastes of small or medium volume in this group decreases largely to reach 10% only.

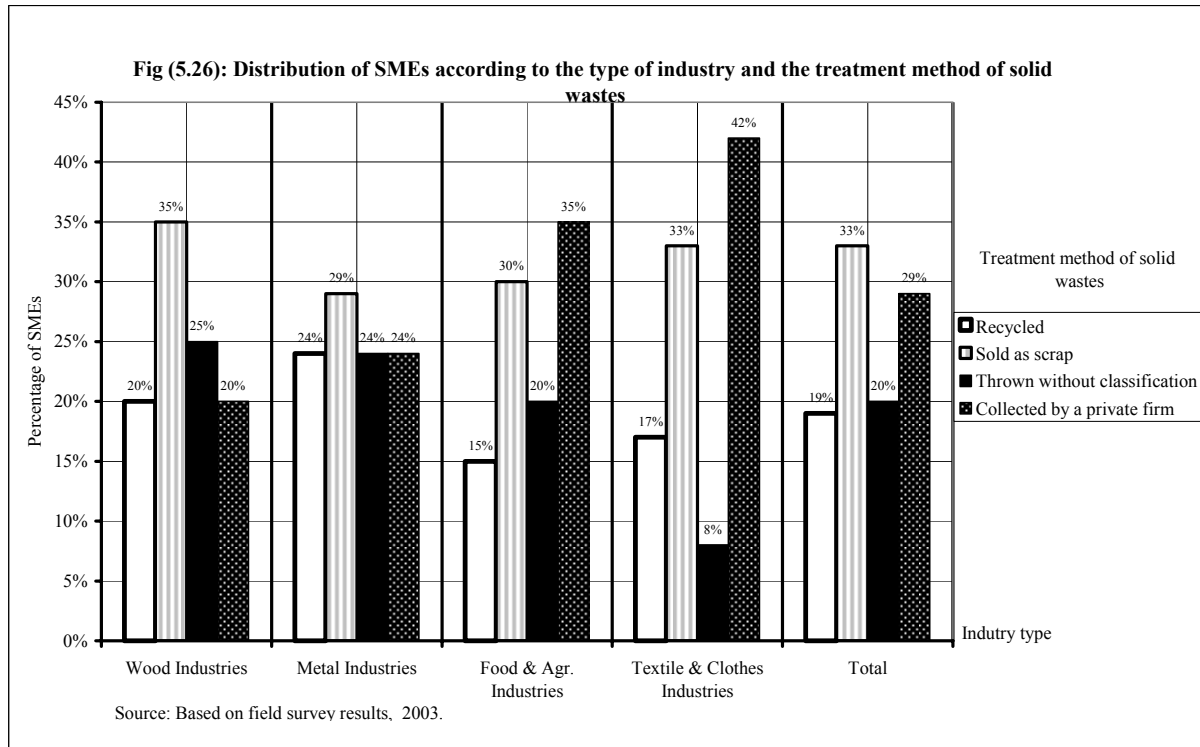
Therefore, from this view, the dependence on a permanent specialist for the maintenance of the machines, as one of the teamwork in the enterprise, or any labour who would attain maintaining courses will save raw materials. Besides, he would supervise the maintenance and the efficiency of the machines performance. Accordingly, this would lead to an ultimate decrease in the volume of the solid wastes produced, reserve the resources.

#### **5.4.4 Treatment methods of solid waste and their impact on the environment**

As we mentioned before, ecological efficiency in the productive process does not only require wise methods for the utilization of raw materials, or rationalizing energy consumption and decreasing the volume of the resulting wastes during the manufacturing process but it also needs efficiency in the treatment procedures for the resulting wastes. In broader terms, these wastes are in fact considered secondary resources which we may make use of in various ways. We should not consider these wastes as dirty remains which we have to get rid of. In order to respect the environmental context and to limit ecological risks, there has to be a precise definition for methods of disposal of the resulting wastes safely and without polluting or imposing any negative impacts on the surrounding environment.

Generally, methods of treatment for solid wastes differ from one enterprise to another and from one industry to another according to the degree of ecological awareness existing in each enterprise. Therefore, Fig (5.26) shows the different methods of treatment for solid wastes in the study area categorized according to the type of industry. Obviously, it is clear that 19% of the enterprises in the study area have high degree of ecological awareness. As they instead of getting rid of these wastes by disposal in the garbage areas or selling them as scrap, they reutilize them in the manufacturing process as raw materials after going through the defined recycling processes.

Whereas 33% of these enterprises, despite their high ecological awareness, are not capable of performing the required recycling process. Accordingly, they sell it as scrap at much lower prices than that of the new raw materials, instead of just getting rid of these wastes without any benefits. On the other hand, 20% of the enterprises in the study area have no ecological awareness and do not realize that these wastes resulting from industry represent big threats to the environment. Consequently, they throw the resulting solid waste into garbage, believing that what is thrown represents a small quantity which can hardly affect any environmental aspects. Therefore, they miss the opportunity of treating these wastes by selling them at low prices or by recycling and reutilization as raw materials in the manufacturing process. They assume that this will save them the monthly paid fees for the company responsible for waste collection, which does not exceed in all cases 15 LE/month.



The last group includes the enterprises with a medium level of ecological awareness. They avoid throwing solid wastes in the garbage areas, instead they pay a monthly share to specified companies for collecting garbage. These companies collect these wastes periodically every 2 days. This group represents 29% of the total enterprises in the study area. From this view, this group, despite their ecological awareness, loses resources which they may make use of on recycling or reselling again. Therefore, it occupies the third rank, when classifying the enterprises in the study area according to their degree of ecological awareness.

It is worth mentioning that the metal industries occupy the first rank among industries concerned with recycling their resulting solid wastes, while food industries come in the last place. In case of enterprises selling their resulting solid wastes as scrap, the wooden industries come at the top, while the metal industries occupy the last ranks. In case of the enterprises which pay a monthly share for getting rid of their wastes, the textile and clothes industries occupied the first rank, while the wooden industries come in the last place. As well as, the wooden industries occupied the first rank among those throwing their solid wastes in garbage places, while textile industries occupied the last place in this group.

From this view, the absence of cooperation between small enterprises in the study area, together with the lack of enough ecological awareness, consequently lead these enterprises to get rid of their wastes without any concern. However, if there is any kind of coordination or spatial relationship between these enterprises, there could have a possibility of collecting these wastes and recycling them to get raw materials that are to be utilized once again in the manufacturing process. Accordingly, we can preserve the natural resources and decrease the negative effect on environment.

#### **5.4.5 Treatment methods of liquid wastes and their effect on the environment**

The type of the resulting liquid wastes differs from one industry to another according to the type of liquids incorporated within the manufacturing process. Some of these liquids require certain methods for utilization and treatment as lubricants and oils resulting from machines and manufacturing processes in the metal industries, food and agricultural industries and some machines used in wooden industries. Although the quantity of the resulting liquid wastes is small, there are many difficulties in treating them, especially if they are directly lead in water drainage facilities.

The pigment and chemical cleaning materials resulting from textile industries and furniture paints occupy the next rank concerning the degree of difficulty for the treatment of the resulting wastes. The larger the volume of the resulting liquid wastes, as in case of textile industries, the more difficult it would be in treating these wastes. Whereas, the waste water resulting from the washing processes incorporated in foods industries follows the previous category.

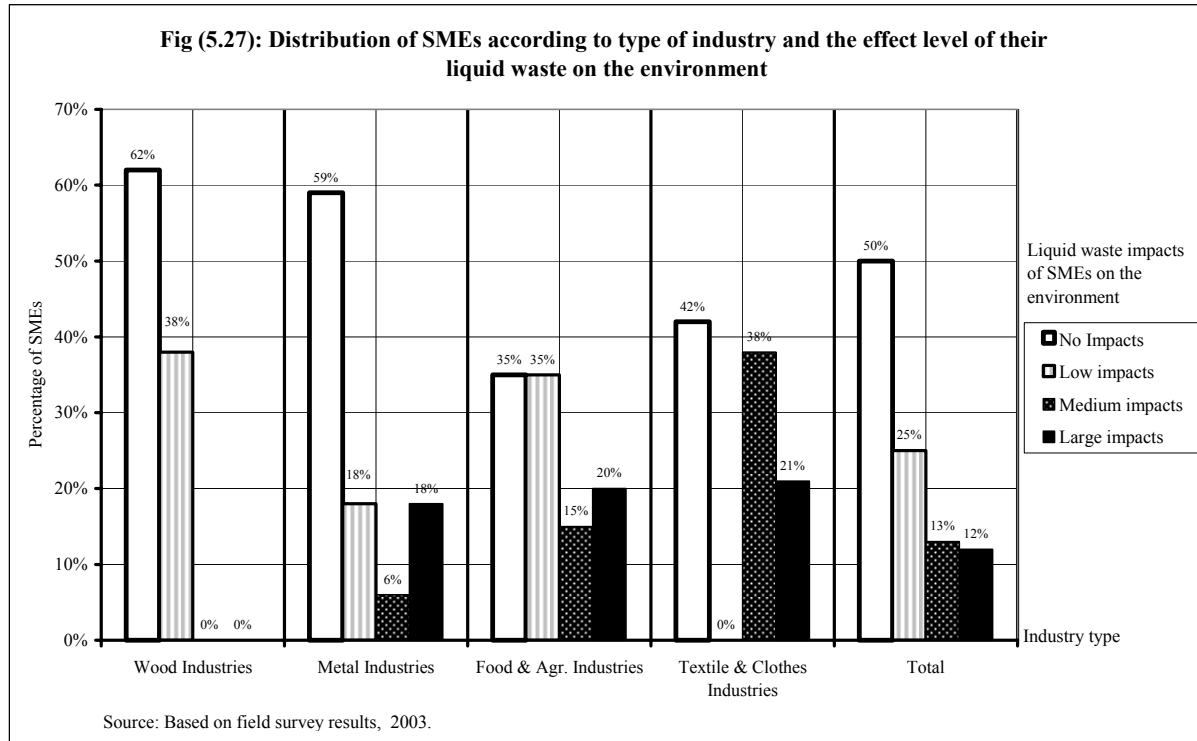
The volume of these liquids plays a role in determining the degree of harmfulness they cause to the environment. It is worth mentioning that the negative impact of these liquid wastes on ecology can be minimized through defining the appropriate methods for treating these wastes. According to law no.93 for year 1962 and law no. 4 for year 1994, that these wastes should be treated to reach the standard specifications before disposing them into the public network for the drainage water. Unfortunately, this is not found in the study area and it could not be provided because of the high costs of the manufacturing drainage networks especially with the spread of the enterprises in the study area.

On the other hand, it can be clarified through the field study that all enterprises in the study area get rid of their liquid wastes through disposal into the public drainage water network without any prior partial treatment. Undoubtedly, this results in harmful ecological impacts, which increase according to the type and size of the resulting liquid wastes. The liquid wastes resulting from manufacturing in the enterprises of the study are different in their size, type and impact on ecology. Therefore, this section aims at classifying the enterprises of study area into four categories according to the type and size of the resulting liquid waste from industry, and which can be stated as follows:

- The first category includes SMEs of relatively high negative effect on ecology. These enterprises throw daily 4.5 litres and more of lubricants, oils and cooling liquids or 63.4 litres and more of pigments and manufacturing cleaning materials or 393.8 litres of impure water in the drainage water. This group includes 12 enterprises in the study area, representing 12% of the total sample. Textile industries occupied the top of this group regarding the negative effect on ecology, while wooden and furniture industries do not have any high negative effect on ecology according to the previous criteria.
- The second category includes the enterprises of medium negative effect on ecology. They produce daily liquid wastes from 2.75-4.5 litres of lubricants, oils and cooling liquids or between 16.6-63.4 litres of pigments and cleaning materials or between 90.6 – 393.8 litres of impure water. This group includes 13 enterprises from the total sample in the study area. The textile and clothes industries are also on the top, food and agricultural industries occupy the second place. As for the wood and furniture industries, none of their enterprises have proven to have medium negative impact on ecology

- The third category incorporates the enterprises of small negative effect on ecology. It includes enterprises which daily produce liquid wastes less than 2.75 litres in case of lubricants, oils and cooling liquids. This group contains 25 enterprises from the total study samples, representing a percentage of about 25%. Wooden and furniture industries occupied the first place in this group, followed by food and agricultural industries, while the metal industries come in the third place. As for textile and clothes industries, none of their enterprises have been categorized among those with weak ecological impact.
- The fourth category includes the enterprises which do not produce liquid wastes during the manufacturing process. All their liquid wastes represent are those naturally resulting from daily human wastes only. They reach 51 enterprises in the study area, representing 50% of the study sample. Wooden industries occupied the first place in this sample, followed by food and agricultural industries, while textile and clothes come in the third place, and finally metal industries are in the last place in this group as it is shown in Fig (5.27).

We can say that 50% at least of the enterprises in the study area impose negative impact on ecology through their method of treatment for these liquid wastes. Despite the different volumes of the resulting waste varying between: large, medium and small, they can all still affect the environment. This connects with the indifference of the owners of the enterprises towards the serious impact that these wastes can impose on the environment. Also, the absence of the country supervision, that can oblige these industries to follow the specified laws concerned with the impact of industries on the environment, plays an important role in this context.



It is worth mentioning that the fact that the remaining 50% of the enterprises not producing liquid wastes does not indicate that they respect the environmental aspects and do not represent any threats on it. But this means that the size of their work and the kind of its production do not yield liquid wastes at the present time, such as woods and furniture industries. As some enterprises stop at certain

phases concerned with producing furniture, doors and windows without the last stage of their final paint, which results in liquid wastes such as (Doko, laket and oster paints).

This is also the case in some enterprises of textile and clothes as their role stop only at the stage of manufacturing clothes. It does not use pigments or the required cleaning material as their enterprises is not extended to that limit. On the other hand, others reach the final stages for the product in which they use the different pigments for clothes. This means that if these enterprises increase their scale of works in the future; it will be also a source of threat on ecology if the entrepreneurs of these enterprises are not aware of the serious impact of these wastes on the environment and their capability of polluting the drinking water and soil.

One of the practical solutions for these problems is the agglomeration of similar small enterprises in one place as they could be allocated on a special manufacturing drainage network suitable for the volume of the daily produced liquid wastes and their types. In this case, the costs will decrease as it will be divided upon all the allocated SMEs instead of bearing these costs individually.

#### **5.4.6 SMEs – possible negative environmental effects**

Unfortunately, the research could not be able to make the required measures to recognize the levels of air, water, noise pollution which small industries in the study area caused, whether inside its work environment or the surrounded outside environment. This is because of high costs of making such measures. However, the results which the research reached in this field depend on field observation for the work of these enterprises, opinions of experts and specialists. Besides, they depend on asking representatives of the neighbours of the work area of small industries.

As well as, there is a dependence on the outcomes of a study on ecological pollution in SMEs which Friedrich Ebert Stiftung made in cooperation with central productive cooperative union of applying on some similar enterprises. Such study depends on collecting samples of air pollutants and samples of drainage water of the enterprises. The samples were analyzed in laboratories. Also the levels of noise resulting from these enterprises have been measured in this study. From the research view, the outcomes of these analyses will apply to a great extent on pollution levels which SMEs did in the study area. What the research reached on this field are as follows:

##### **5.4.6.1 Wood manufacturing sector**

This sector contains furniture industry, door and windows shapes and frames (Appendix 5.1 shows several photos for the products of SMEs in the study area according to the type of industry). The raw materials used in this sector include:

1. Natural woods imported from abroad in the all cases. Besides, artificial wood such as plywood, blockboards and particleboards imported from abroad in the most cases.
2. Glue: two types of glue are used: natural and artificial type which is imported form abroad as an alternative for the natural one.
3. Nails, metal wires, hinges, handles, ornaments, wood decoration, golden tapes and shells.
4. Materials used in upholstery: natural materials such as cotton and carina (manufactured from palm fronds). Fabricated materials such as artificial sponge, forum and clothes whether they are artificial or natural and strings as well.
5. Chemical materials used in painting works such as Doko paint, organic solvents and lining and brightening compounds.
6. Mirrors, glass shelves and glass products.

The manufacturing process starts with design and drawings and specifying of the dimensions of wood to be cut and shaped. Then, cutting phase in which electric saw and some equipments and materials used for cutting. Then, collecting process comes in which the various parts are collected to manufacture a piece of furniture, instalment and glue. Then come the phases of sandpaper, lining, painting with lacquer, ornaments, handles etc. or gilding in case of salons. After that, upholstery phase come for furniture which needs it. Then, the last phase comes which related to brightening the manufactured pieces of furniture. It is worth mentioning that these phases can be done in one enterprise or more than one as a production line. This is the most common way in the study area.

Wood Processing of produces large amount of, as shown in Photo (5.5). This sawdust is often collected and sold at a very cheap price. The sawdust is used in general in many shops and restaurants to help cleaning the floors of these enterprises easily. This also can be used, after adding pigments and chemical colours on it, to be thrown on the ground to make drawings at popular weddings and occasions. We could not consider this use as a good one from the environmental view as after that they get rid of it in rubbish area. Accordingly, this causes loss of economic value of these materials. It also will increase the stress on the environment.

Also, the process of wood results in pending materials in the atmosphere which spread outside. These materials are so tiny and could not be seen by bare eyes. They could penetrate respiratory system for those who are subjected to them. In absence of breathing protection for the employees, they could be infected by the various diseases of respiratory system by these particles.

Small parts of broken wood are also produced through the previous process of cut. Some of them reused in new products, but large amount of these parts are either thrown away to garbage dumps or used as a fuel to prepare glue. This leads to emanation of CO and CO<sub>2</sub> which pollutes air inside the enterprise. It also affects the surrounded residential areas. Besides, the scent of glue is very bad inside and outside the enterprise. It is worse if glue is prepared outside the enterprise as the surrounding people would feel angry and uncomfortable.

Also they get rid of quantities of textiles (scrapes) and small pieces of sponge and carina from the upholstery process by throwing them in the rubbish bin. As well as, sheets of sandpaper which are used before resulted, cotton used in brightening paints process and empty paints' cans all of them are to be thrown in the rubbish bin. This matter results in additional burdens on the environment.



**Photo (5.5): Big amount of sawdust resulted from one SME of wood industries in the study area.**



Continuous noise from cutting and collecting processes cause temporary dumbness for employees in the enterprise. This also makes the surrounding people to be uncomfortable and angry. During painting process, emanate vapours of used organic and chemical materials with harmful effect on respiratory system, on skin especially in the absence of breathing protection and gloves in most of the enterprises in the study area. Also the liquid wastes of chemical materials resulting from painting process are thrown directly in the public drainage network without any treatment. This matter has a negative effect on the environment. Regarding measurements which have been accomplished on similar wood enterprises, the most important results were the following:

1- Concentration of total pending particles in the atmosphere reaches 496 microgram/m<sup>3</sup> in a second during cutting process, it decreases to reach 172-180 micro-gram/m<sup>3</sup> in a second during other activities (maximum permitted level is 230 microgram/m<sup>3</sup> in a second).

2- Concentration of CO reaches 52 parts in a million during wood burning to prepare glue. It decreases to reach 6 parts in a million during other activities (maximum permitted level is only 50 parts in a million).

3- Noise level reaches 95 decibel inside the enterprise during operating the machines and equipments. It exceeds the maximum permitted level of noise which should not exceed 90 decibel. The maximum permitted level of noise is the maximum level that the ear can bear without problems.

However, the maximum level of noise to hear voice signals and distinguishing speeches should not exceed 80 decibel. That is mean the enterprises of carpenter ships in the study area which use mechanical equipments in industry have exceeded this level. This matter results in shortage in hearing process on the long term. It also may cause dangers for employees as they may expose to accidents during operating these equipments as they did not hear the alarms during the manufacturing process. Regardless, the surrounding residential areas are affected negatively during the daytime working because of the increasing of noise limit than the permitted one. The standard permitted level in the residential areas in which there are enterprises should not exceed 60 decibel.

4- In case of pending particles in the atmosphere which is observed outside the enterprise. It is found out that they exceed what is permitted as it is reached 170 microgram/m<sup>3</sup>. while what is permitted should not exceed 70 microgram/m<sup>3</sup> in case of pending particles which have the ability to penetrate respiratory system. While in case of the measurements of CO, its measurements were in the permitted limit outside the enterprise.

#### **5.4.6.2 Metal manufacturing sector**

This sector includes metals lathing, alumetal forming and operating and metal forging (**fer forgé**) as well. The raw materials used in this industry include iron of all kinds (steel – surface – wrought), alumetal and sheets of welding of tin, various accessories of ornaments, handles, hinges and etc...

The manufacturing process differs from one enterprise to other according to the final product. But there is participation between all enterprises in this sector in a group of basic processes of manufacturing phases. Thus, these processes are: lathing, welding, lining by using iron, point and shuttering by using shuttering tape machine. Then brightening comes by using metal oils, brushes, pieces of clothing. Some enterprises do painting for the final products using artificial oils.

The previous manufacturing process results in wastes which affect negatively the environment such as metals' oxides during cutting and welding process, solid wastes which represent the results of finishing, welding wires wastes and small pieces of metals, as shown in photo (5.6). Some enterprises collect these wastes and sell them again, but others throw them away haphazardly. Also, during the manufacturing process, some pending particles are emanated in the air which is ready to be breathed. These particles are able to harm the respiratory apparatus of employees. The resulting iron wastes from lathing and what results from manual digging process in addition to

some liquid wastes resulting from the painting and brightening processes for the final product are discharged into the public drainage without any kind of treatment. The matter, that contributes increasing the environmental risks in the study area. The most important results of measurements which took place on similar enterprises inside the enterprise are:

1- Emanation of CO of concentration is about 76 parts in a million, while what permitted is maximum 50 parts in a million only.

2- Emanation of Nitrogen Dioxide (NO<sub>2</sub>) of concentration 3.3 part in a million, while what permitted are maximum 3 parts in a million only.

3- Emanation of sulphur dioxide (SO<sub>2</sub>) of concentration 2.4 part in a million, while what permitted are maximum 2 parts in a million only.

4- The whole pending particles on air with concentration 404 microgram/m<sup>3</sup>, while what permitted are maximum 230 microgram/m<sup>3</sup> only.

5- Regarding the emanation of CO in the surrounding residential area, its concentration reaches 27 parts in a million, while the maximum permitted level is 9 parts in a million only. This matter means that the level of emanation CO in the case study is three times more than what is permitted. In the case of the emanation of Nitrogen Dioxide, its concentration reaches 0.074 parts in a million, while what permitted is 0.070 parts in a million only. The concentration of sulphur dioxide reaches 0.066 parts in a million, while what permitted is 0.060 parts in a million only. The whole concentration of pending particles reaches 253 microgram/m<sup>3</sup>, while what permitted is 150 microgram/m<sup>3</sup> only. Besides, the



**Photo (5.6): Some kinds of solid wastes resulted from one SME of metal industries in the study area.**

level of noise resulted from mechanical machines used during manufacturing process which exceed the permitted levels whether inside or outside the enterprise.

#### 5.4.6.3 Foods and agricultural industries sector

This sector includes activities of low negative effect on environment such as sugar cane juice industry, industries based on date palm leaves midribs (cages, ropes, hutches, chairs industries, tables, sofas, manufacturing of tools used in baking in the rural ovens ...etc), as shown in photo (5.7). Therefore, the environmental effect will be only of the volume of solid wastes which sometimes are thrown in the garbage dump. This means also, lost some of natural resources, which could be used in a better way.

It also includes industries of medium negative effect on environment such as packing foods materials, rice polishing, milk products and meat industry, as shown in photo (5.8). The the environmental problem in such industries is in the increasing of pending particles in the air which may penetrate respiratory system of human. This causes some diseases in case it is increased than what is permitted as mentioned before. This also will be proved to be true by the measurements on similar industries in the study area. The problem also is in the liquid wastes resulted from milk products industry (what is known as a whey) especially if it is thrown directly in the drainage water without any treatment. As well as, the increasing in the noise level than the maximum permitted level in case of rice; it causes many health harms for employees if there are no available protection facilities to avoid that.

However, the foods enterprises of high rate of pollution on environment; they are represented in the industry of dough such as bakeries, eastern sweets, as shown in photo (5.9). All of them need electric power and energy resulted from burning gas oil and heavy oil. The environmental risks represent in this case on emanation of the polluted gases from the previous process with the lack of ventilation equipments to pull these

gases outside the enterprises. Also, there are no chimneys compatible with the standards in most of these enterprises which according to Egyptian Laws should to have a height not less than 3m higher than any higher surrounding building in a range of circle its radius not less than 25 m and its centre is the chimney. The end of this chimney should include a refiner and smoke store with fastness in leaking gas from it. Also, these

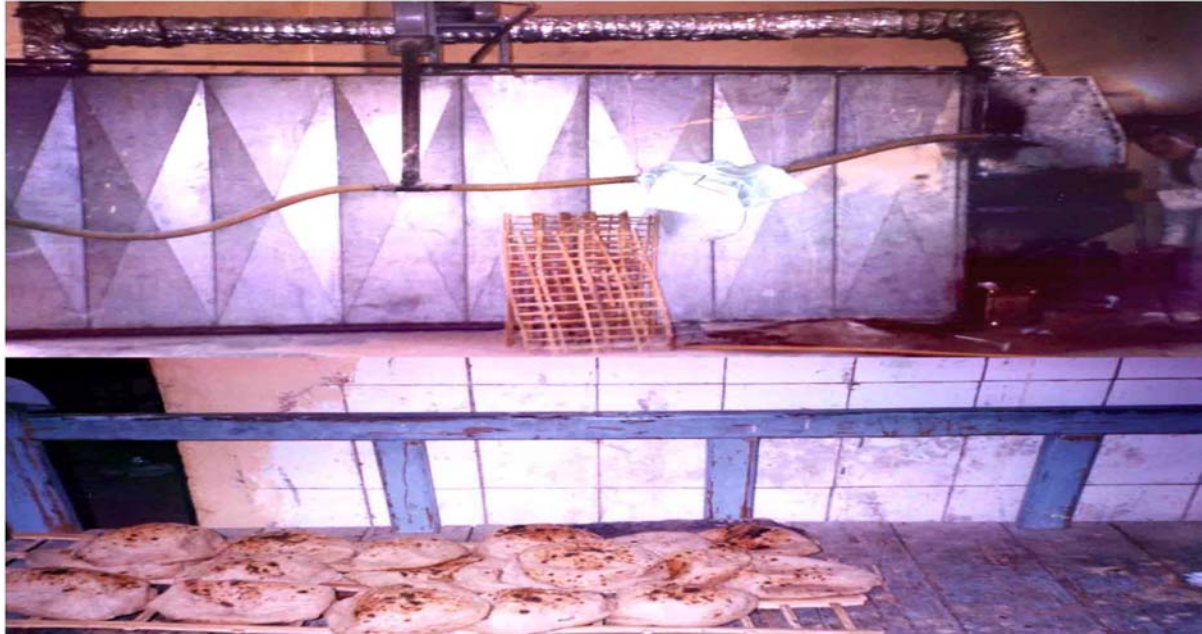


**Photo (5.7):** Some kinds of products based on date palm leaves midribs, which have low negative effect on environment



**Photo (5.8):** Products of rice-polishing have medium negative effects on the environment in the study area

chimneys should to be free from sharp slopes or pockets in which no burning gases may be collected.



**Photo (5.9): SMEs of dough and bakeries are the greatest polluter on the environment, whereby they use energy resulting from burning gas and heavy oil in the study area**

#### **5.4.6.4 Textile and clothes industries sector**

This sector includes strings textile industry, preparation and pigments, sewing ready clothes and carpets (photo 5.10). The units includes textile and clothes pigments are considered the most important units relevant to environmental pollution especially the traditional one (photo 5.11). The used organic, chemical and cleaning materials contain negative effects of pollution on River' Nile and water resources if it is not treated properly before throwing in the drainage water.



**Photo (5.10): Some products of SMEs of textile and clothes in the study area**

Unfortunately, there are no measurements for the volume of liquid pollutants resulted form textile industries in the study area such as; PH which should not exceed 9 milligram/litre, Biochemical Oxygen Demand (BOD) which should not exceed 60 milligram/litre, Chemical Oxygen Demand (COD) which its maximum limit should not exceed 100 milligram/litre, and Total Dissolved Solids which should not exceed 2000 milligram/litre. It is also shall to be free of coloured materials. Its Greases and Oil concentration should not exceed 15 milligram/litre, besides, other criteria and specifications for certain substances when



**Photo (5.11): SME with traditional textile and pigments unit in the study area has high risks on the environment**

discharged into waterways. In a study for Fredrich Ibert Stiftung upon ecological pollution in small industries over similar textile enterprises, this study proved that textile enterprises which include pigment units leak their liquid wastes directly on drainage lines without treatment. These wastes contain high ratio of organic and chemical materials which used before, besides, pigments, kerosene and heavy elements. What makes the matter more complicated is that small enterprises in the study area almost use traditional technologies in textile pigments. That is because they are not able to possess the required equipments for pigments. This matter increases pollution levels of water resources.

#### **5.4.7 Summary**

The aim of this topic was to test the sub-hypothesis saying the production process in the SMEs includes high environmental risks due to the lack of ecological awareness represented in the failure to make optimum use of raw materials and energy and absence of production control mechanisms. This study showed that, the old idea saying the SMEs are environmentally friendly has changed, as it has been found out that most SMEs in the study area are considered sources of pollution. Also, owners and employees of SMEs have very low environmental awareness. Such results have been reached through analyzing the outcomes of the field study, observation, interviews with specialists and experts and citing findings of laboratories examination carried out for similar enterprises in the study area.

It has been shown that wood and furniture industry in the study area depends on more than 70% of study samples on imported raw materials, despite the availability of the renewable local raw materials of wood resources. This, of course, loads new burdens on the environment as a result of transporting such raw materials thousands of kilometres to manufacturing places. However, this problem falls not only on the SMEs alone, but also on the dominant system in the state as a whole, which does not make use of the available local potentials. But, what falls on the wood industry, according to the study viewpoint, and has negative effects on the environment is that it does not exert efforts to reduce the volume of solid waste resulting from the production process. It gets rid of the wastes through selling it at cheap price, as is the case in sawdust, selling it to shops, which, in turn, use it in land cleaning. This sawdust sometimes is dyed to be used in embellishing land in popular wedding parties, and then it would go to rubbish dumps and might pollute soil as it contains polluted dyes.

Small pieces of wood might be used as a source for fuel to heat glue, thus CO and CO<sub>2</sub> emanates at higher than permissible rates, not to mention bad smells that do harm to the inhabitants of the surrounding residential areas. Some enterprises throw these wastes direct in the garbage, wasting secondary source of raw materials which could be reprocessed in the production process. In addition to the concentration of pending materials in the air resulting from the production process is very high (exceed the permissible level) either inside or outside the enterprise. These pending materials, of course harm the health of employees and the enterprises' neighbours. There are also liquid waste resulting from the painting process, which contains dyes and chemical substances. It is directly thrown into sanitary drainage network without any treatment, which negatively impacts on waterways. As for noise of machines in the enterprises, its level is higher than the permissible one and it is a cause of complaint of the inhabitants in residential areas surrounding the enterprise.

Concerning the metal industries sector, it was shown from the field study and the examinations conducted to similar enterprises in the sector that some waste comes from production process that negatively impacts on the environment such as metal dioxides that result from cutting and welding metals. The concentration rates of such metal dioxides are higher than the permissible one. There is

also some solid waste represented in the leavings of finishing and grinding processes– leavings of weld wires – and small pieces of metals, as they are collected in some enterprises and sold to foundries and some other enterprises get rid of them randomly. There are also some particles that remain in the air and could be breathed. They exist at higher than the permitted concentration rate. Besides, there are small pieces of metals that come out of lathe and are mixed with oil and those resulting from chisel, in addition to some liquid waste resulting from painting and varnishing the end product. This liquid waste is thrown in sanitary drainage network before making any treatment for it,. Not to mention the level of noise coming from machines exceeds the permitted limits either inside the enterprise or in the surrounding residential area.

As for agriculture and foodstuff industries sector, this sector is regarded as one of the nearest sectors to the sustainable development due to its heavy reliance on farm raw materials that are renewable. But, the negative environmental effects resulting from that sector are deemed great in some SMEs producing dough and east confections industry. These enterprises use gas oil and heavy oil as a main source of fuel and energy in the production process. Such negative effects are also attributed to the lack of chimneys meeting specifications for discharging gases and steams emanating from burning fuel. This negatively impacts on the factory internal environment and the surrounding external environment. Furthermore, some diary industries discharge their liquid waste directly in the sanitary drainage network without removing organic substances from it, which threatens water resources afterwards. As for the industries that depend on a renewable natural resource such as date palm leaves midribs industry, the environmental risks represents in the volume of solid waste, which is got rid of either by burning or throwing it in garbage dumps. This places additional burdens on the environment. Regarding the industries of rice milling, they are considered the least environment polluting enterprises. Thus, their real harm to the environment is represented in the high rate of particles in the air. As well as the high level of noise which exceeds the standard rates, especially if those enterprises are inside a residential area, which is rarely happen.

As for textile and garment sector, it is regarded as on of the least environment polluting sectors in general except the dyeing and preparation processes. These processes are considered a source of liquid pollution in that sector, especially in light of reliance on old-fashioned technologies in dyeing, which increases the resulting of liquid wastes and threatens water resources. The solid waste in this sector is considered of high value compared with the price of the input from raw materials in this industry. So, it is rarely thrown into garbage dumps without being used. It is often sold as scrap to be benefited by in making carpets or reusing it as a secondary source of raw materials used again in that industry. Such industry is neither a source of noise in the study region nor a source of the emission of air polluting gases as was the case with abovementioned sectors.

Generally, it is worth mentioning that the SMEs made a rational use of energy in comparison to their production volume in 36% of the sample in the study area, while there was abusive consumption of energy reached approximately 22% of cases in the study area. According to the field study, it has been proven that the enterprises with less number of employees achieved more rationalization of energy consuming in comparison with larger enterprises. This is due to the fact that the production control is stricter in the enterprises that have less number of employees. The rate of energy consumption is connected to the quality of worker's education. High educated worker is more able to manage with energy consumption. The field study showed that the enterprises with high educated employees are the most rationalized in terms of energy use and vice versa.

Concerning raw materials used in the industry, which indicate the environment awareness within enterprises, it came out that 10% of enterprises in the study area have high environmental awareness. This is due to the renewable local natural raw materials which they depend on. However, not less than 29% of enterprises have low environmental awareness as consequence of raw materials importation in the present of the local alternative. Moreover, this percentage reaches 73% if we consider enterprises purchasing processed raw materials from domestic market. Such kind of materials is an extra burden because of inconvenient transport methods. The lack of coordination between enterprises to transport raw materials increases the frequency of transport traffic. Other point is the long distance between the materials origin and enterprises. This lead us to think about finding a local alternative that requires uniting of efforts to provide enough raw materials, thus, transporting costs are saved.

Regarding the solid wastes resulting during the manufacturing process, about 22 cases are producing huge quantities of solid wastes. While 38 cases produce lower quantities. And our study proved that for 18 cases of the first group, the main reasons for this problem are machinery and equipment. Thus, the absence of periodical maintenance by experts and specialists leads to negatively affect the efficiency and ability of the machine, accordingly huge quantities of solid wastes are produced. Such kind of enterprises is a real menace for environment. About 28 cases of the second group, assigned the task of maintenance to experts. These specialists are either working in the same enterprise or are contracted with to periodically conduct maintenance operations. Without doubt, the second group shows more environmental awareness. On the other hand, the enterprises that are interested in recycling their solid wastes in the study area do not exceed 19% of total enterprises. While 20% throw their solid waste in rubbish dumps, without realizing how they are a threat to the environment and squander resources.

Concerning the liquid waste resulting from SMEs in the study area, it differs in both volume and danger they impose according to the industry kind. Thus, the field study proved that at present 12% of enterprises in the study area have negative effects on the environment. While 50% of enterprises have no negative effect on the environment until now, because they have no liquid waste to throw it untreated in the sanitary drainage networks. So they do not harm the environment or water resources till now. This does not mean that such enterprises are environmentally friendly. The production size of these enterprises is small and does not reach the extent of producing such wastes. Generally, most of enterprises in the study area have lack environmental awareness, so they do not recognize the necessity of setting up an manufacturing drainage network to treat liquid waste before discharging it in the public sanitary drainage network. They also have no ability to do that in light of the absence of coordination between owners of such enterprises in one hand and the state in another hand.

## **5.5 Conclusion and results of the chapter**

The aim of this particular chapter was to test the hypothesis that stated the following: The effects of SMEs on sustainable regional development remain limited at present time due to a variety of factors; these factors are: the limited amount of capital invested in SMEs; the instability of supply and demand; the high market risks; the limited depth of cognitive experience of employees coupled with their low levels of vocational qualification; the absence of social guarantees or appropriate means of manufacturing safety for employees ; and the overall lack of environmental awareness of such enterprises seen by inefficient use of raw materials and energy. Three main issues were discussed in order to test such a hypothesis. The first issue was related to economic constraints facing SMEs in the study area and how these constraints hinder SMEs' effect on sustainable development. The second issue was related to the social constraints facing SMEs in the study area and how these social

constraints effect the SMEs' contribution to sustainable development. And the third issue was related to the level of environmental awareness within SMEs and the effects this awareness, or lack thereof, has on sustainable development.

The findings of the study regarding the first issue (i.e., **the economic constraints limiting the contribution of SMEs to achieve sustainable regional development**) indicated that the limited amount of capital invested, defined as cash liquidity plus fixed assets excluding land and building(s), plays an important, primary role in the ability of SMEs to survive and continue. The greater the amount invested in working capital, (i.e., capital for the costs of operation, production and labour for the greatest period of time possible), the greater is the ability of SMEs to continue on a stable path and overcome market risks.

SMEs with large capital investments were identified as those more likely to be sustainable in comparison with those SMEs with smaller or medium amounts of capital invested. Thus, the former had the ability to market their products locally, regionally and nationally due to the availability of transportation facilities owned by such enterprises. SMEs with medium levels of capital invested could only market their products regionally and locally; whereas those SMEs with the smallest levels of capital investment were only able to market their products within their local community. These SMEs with smallest levels of capital investment lacked the capacity to bear the necessary transportation costs to market their products in other markets. The enterprises which cooperated with other institutions to market their products faced the least amount of problems within their production system; had a greater ability to achieve high levels of added value; and had a greater level of stability with less market risk as opposed to those enterprises which had no established cooperative networks with other institutions.

This study disclosed that there were other factors that impact and affects beside the above-mentioned factors the level of sustainability of SMEs such as the lack of experience and know-how pertaining to the status and requirements of a particular market. Whereby, this lack of knowledge forces many SMEs to copy the models of successful existing enterprises in an attempt to achieve the same or similar levels of success which their counterparts had already gained. Consequently, the supply of goods and services in the marketplace increases relative to the demand that is present; the market then becomes saturated, and the resulting imbalance leads to difficulties in the marketing of products. This generates a negative impact on the future of SMEs, especially for those enterprises with limited capital, as they depend primarily on the local market for marketing their products. The larger-capital enterprises are better able to market their products at both the regional and national levels; therefore, these concerns are better able to resist the critical point where an enterprise is forced to discontinue conducting enterprises. As a result, the length of time of survival of larger enterprises is generally greater than that of SMEs with limited capital. This study concluded, through field studies and the opinion of experts and specialists, that the enterprises in the study area have undergone several stages as follows:

**The first stage: duplication of successful models of SMEs.** In this stage, the small investor, who is unable to carefully read and understand the basic demand for goods and services within the market, replicates the strategies of successful enterprises in the hope of achieving the same level of success. The result is the production of goods or products that are incompatible with the market requirements. Thus, the marketing becomes difficult; the affected SME starts to incur losses; and gradually, it fails to produce its products continuously. Accordingly, the enterprise enters **the second stage: producing according to pre-agreement with the client.** In this stage, the enterprise adopts a production style



based on precise, prior orders of clients. This production style, with its temporary demand, causes the enterprise to lose its efficient employees to those enterprises with permanent production cycles and relevant higher wages. These skilled, efficient employees are replaced by low-skilled employees or other skilled employees that need additional time to adapt to the production system in the new enterprise. This leads either the production of low quality products or high quality production with a long production period. Accordingly, **the enterprise enters into the third stage**: loss of client's confidence in the enterprise. In this stage, the clients gradually lose confidence in the enterprise, as production times are increased or low-quality products are produced due to diminished skill levels of the employees. Consequently, temporary unemployment becomes longer and eventually leading to permanent unemployment. This pushes the enterprise into the **fourth stage: closure and bankruptcy**.

Large-capital enterprises take a longer period of time than smaller-capital enterprises to reach such a dangerous stage since, as previously stated, they are able to market their products in a wider market area than small-capital enterprises. From the researcher's view, the SMEs in the study area will be unable to avoid closure and bankruptcy for any great length of time in light of rapid changes in the global market if they stay continue to work individually and without any coordination with other SMEs even if slight profit margins are achieved.

As for the second issue (**the social constraints limiting the contribution of SMEs to achieve sustainable regional development**), it has already been shown that SMEs provide job opportunities for low qualified employees. Moreover, it has also been shown that the level of social insurance and manufacturing safety provided by such enterprises for their employees is very low, a thing which negatively impacts the degree to which an enterprise's ability to successfully achieve sustainability. The impact of these social obstacles on SMEs and their continued ability to operate has already been tested. Results of these tests indicated that the enterprises that ensured more than 55% of their employees relative to work conditions and those that provided social insurance for more than 64% of their employees were the enterprises that achieved the highest levels of added value and hence, considered to be the most successful enterprises. Enterprises identified as attaining high levels of added value relative to the owners' backgrounds and experiences were those enterprises whose owners gained previous experience through industry training centres or enterprises, as well as technical education as opposed to those enterprises whose owners gained experience by "inheritance" (i.e., passed down from older, more experienced generations).

From the researcher's point of view, the worker is considered to be human capital within the enterprise which is not any less important than the working or fixed capital. Therefore, an enterprise should invest in its human capital so as to further maximize its profits. Investment in human capital is accomplished by 1- **keeping human capital** by providing employees with the suitable social insurance; 2- **protecting human capital** by sufficiently ensuring the safety of employees while on the job; 3- **improving human capital** through raising the employees' skill efficiencies and cognitive abilities via job training from industry related training centres. By doing so, a level of high quality production, continued and improved innovation, as well as the ease by which changing market demand will be met will be assured for the SMEs' employees. However, investment in human capital should not be considered an individual responsibility for each enterprise to bare the brunt of separately. But, rather, it needs to be a joint responsibility among the SMEs relative to the particular specialty of entity. Furthermore, state agencies should contribute to this kind of investment by helping to define the role SMEs should play within the social economic map of the state, as a whole.

As for the third issue (**the environmental constraints limiting the contribution of SMEs to achieve sustainable regional development**), the study showed that the degree of environmental awareness among SMEs was limited. Also, the old idea which states “the SMEs are considered environmentally friendly” has changed. Rather, the SMEs in the study region had become a source of permanent threat to the environment. The low level of environmental awareness shared among such enterprise owners, enables these entities to believe that their actions are non-contributory to the harming of the environment. Their arguments of “the volume of the liquid or the solid waste of our enterprises is relatively small” are invalid at best. On the contrary, the geographic distribution of these SMEs, as well as the sheer number of these concerns located within the residential areas in the study region, makes the environmental effects from these entities quite serious.

Analyses and measurements of the environmental impacts and related “side-effects” from the SMEs activities within the study area have shown that the emission of air and liquid pollutants resulting from the production processes by SMEs has exceeded the permitted maximum levels. In addition, the noise levels that SMEs generate had negative impacts on the surrounding residential areas, as well. Furthermore, these enterprises produced a large amount of solid waste daily; these wastes were disposed of in rubbish dumps without any regard for additional use. A secondary resource was then squandered instead of being reused as raw material for another production process.

The rise in the volume of solid waste in some enterprises may have been attributed to the absence of adequate periodic servicing of machinery and equipment by specialists and technicians. This was considered to indicate a notable level of degree of lack of environmental awareness among these enterprises. This lack of environmental awareness was easily seen when taking into account the amount of air pollution generated from raw material transportation activity. A total of 29% of the SMEs in the study area depend on imported raw materials; this percentage rises to 73% if importation includes those enterprises that depend on manufactured raw materials imported from the national market. Thus, frequent transportation of these materials causes serious negative effects on the environment.

Less than 10% of the enterprises in the study area depend on local natural renewable raw materials despite the possibility of substituting imported raw materials with the local natural renewable raw materials in some industry sectors such as the wood sector. More than 70% of SMEs in the wood sector depend on imported raw materials. This substantiates the need to establish collaborative efforts among SMEs in the area relative to the productions systems of these small concerns. This collaboration should be handled together with either a governmental or non-governmental entity to provide oversight and direction for SMEs from raw material handling through end product marketing.

Less than 36% of the SMEs in the study area rationally use energy in comparison to their actual production volumes. This study shows that such industries, especially those polluting the environment, should be moved to one manufacturing zone so that the environmental effects resulting from such enterprises can be better controlled. Therefore,, it will be easier to collect and recycle solid wastes; easier to treat manufacturing wastes prior to discharge into the drainage network system; and easier to reduce gas emissions to permitted levels. Furthermore, relocation efforts will help to decrease the high levels of noise experience by the inhabitants currently living in close proximity to enterprises. This will lead to further potential for the enterprise of additional sustainable SMEs in the region. These SMEs will be economically and socially successful while complying with the required environmental standards. This notion will be highlighted in the next chapter.

## **Chapter 6: Potentials regarding the SMEs contribution to sustainable regional development**

### **6.1 Introduction**

It is no doubt that the hope is still there for the SMEs\* to play an effective role in sustainable regional development, especially in developing countries such as Egypt. Such enterprises enjoy great flexibility enabling them, on the one hand, to respond to market requirements while enabling them to provide many job opportunities for employees, on the other hand. Furthermore, these entities have the ability to depend on local raw materials to meet a large part of local demand for commodities and services. This helps to reduce importation of commodities and services which are transported long distances. Thus, this will reduce the degree to which negative impacts from transportation are present to affect the environment.

In general, SMEs depend on local technologies that developed throughout the past decades. The large- and medium-sized enterprises, especially in third-world countries, depend mostly on imported technologies, so SMEs are certainly qualified enough to drive the chain of added value within the regions. As such, they help to activate many economic and social activities and provide job opportunities within a variety of domains. The SME sector in Egypt, despite all its potential, is not considered to be part of the national economic map and is not seen as a pioneering sector that can help achieve sustainable regional development. Such a sector has been seen, until now, as a marginal sector that only helped to solve unemployment problems that resulted from economic reform measures the state has been taking since the early nineties of the last century.

Such a view requires that SMEs be provided with both financial support and technical support which includes support for different production stages within a particular sector to help overcome production and environmental problems. It was observed that the small scale enterprises are the quickest in terms of emergence, as well as failure and disappearance. As long as such small enterprises work without any coordination or technical support from the state, their ability to achieve regional sustainable development will remain limited even though their potential to achieve that goal is high.

Generally, this chapter aims at becoming acquainted with the potential within the environment of SMEs to contribute to achieving sustainable regional development. As such, they have the ability to make use of local raw materials and to drive the chain of economic activities within the region. They also have the ability to maximize their work through clusters and networks via the concept and use of production lines. More specifically, this chapter aims to test the hypothesis stating that "SMEs offer high potential for the sustainable development of regions" on the grounds that SMEs can provide, in many cases, raw materials that may be imported on both the regional and national levels. Such potential, so far, has been used limitedly. Many SMEs on the regional level also do not make use of work potential through manufacturing clustering (the idea of production lines) even if they have the desire to do so.

### **6.2 SMEs' ability to provide raw materials**

This topic aims to test the sub-hypothesis that the SMEs have considerable potential for sustainable development because they are able, in many cases, to provide raw materials that could be purchased

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\* In this dissertation the abbreviation SMEs is used in different ways according to the specific context. In chapter 1, 2, 3 the term refers to small and medium enterprises in general, whereas in chapter 4, 5, 6, 7 the term is used as abbreviation for small manufacturing enterprises of which most are micro enterprises.

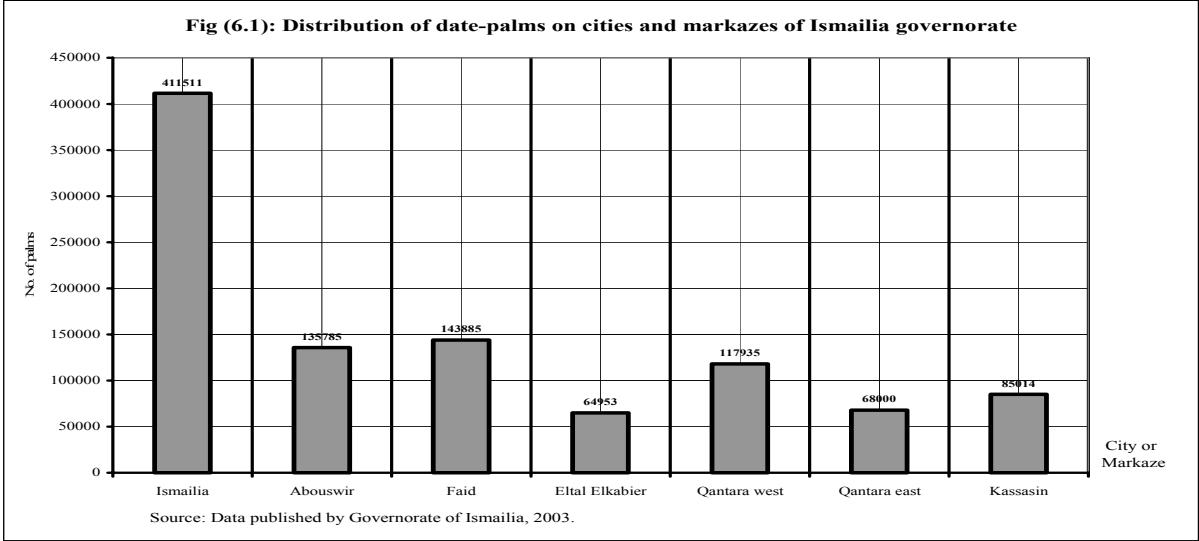
from the regional and national markets. Such potential is limitedly exploited so far. To test such hypothesis, the ability of the SMEs to provide raw materials required for the industry to depend on local raw materials on the one hand and their ability to recycle the solid waste resulting from the production process on the other hand should be known. The SMEs in the study region depend mainly on raw materials purchased from the domestic market or those imported from abroad.

In light of the absence of coordination and cooperation among such enterprises at present, each enterprise meets its needs of raw materials by itself. This bears the SME by burden of transport costs of the raw materials from the market. This also adds pollution to the environment through the emission of harmful gases resulting from the transport processes. If we take into consideration the fact that a high percentage of the enterprises in the study area depend on imported raw materials, of course the environmental pollution will rise. Furthermore the high price of imported raw materials in comparison to the local alternative is increasing the price of end product and, in turn, reducing the opportunities of marketing.

According to Fig (4.5) the ratio of enterprises that depend on imported raw materials is 29% of the enterprises in the study area, while the ratio of the enterprises that depend on non-renewable raw materials from the national market reaches 44%. It is worth mentioning that wood industry sector comes first among industries that depend in their production on imported raw materials, as 71% of enterprises depend on imported raw materials, which is a big percentage. So, light should be shed on such a sector and the available potential to provide local raw materials of high quality similar to the imported ones. Such raw materials should be renewable so that the right of coming generations in these recourses will be taken into consideration. This means that the use of such materials considerably matches the sustainable development thinking, and it rather will help achieve sustainable development inside the region. The following are a review of the potential of the raw materials in the wood industry sector:

**6.2.1 Wood that can be manufactured from Date Palm Leaves' Midrib (DPLM)**

Ismailia Governorate is distinguished in general with the wide-spread existence of palm trees, as the number of palm trees in Ismailia hit approximately 1.03 million (photo 6.1). Fig (6.1) illustrates the distribution of the palm tress in the governorate, as the largest number of palm trees is concentrated in Ismailia city and surrounding areas.





**Photo (6.1): Ismailia governorate is distinguished in general with the wide-spread existence of palm trees**

The palm trees are considered an important source for many raw materials used in small industry of the local communities (photo 6.2). As Leaflets, which are used in several environmental industries such as furniture industry and scuttles are got of it. Bunch of dates of the palm tree could be used in manufacturing native sweepers, baskets and all kinds of hats. Also, red palm fibres can be taken from the palm tree to be used in manufacturing ropes and household sweepers. Also (photo 6.3), the Date Palm Leaves' Midrib (DPLM) are used in the present time in manufacturing hutches of fruits and vegetables, some native baker's tools and some kinds of chairs and tables used in tourist villages, see photo (6.4). Besides, the palm trees have main product: dates with all their types, which can be sold fresh, dried or packaged. There is nothing from the palm tree that cannot be used.



**Photo (6.2): Some kinds of raw materials resulted from palm trees**

**Photo (6.3): Some products based on raw materials from palm trees in the study area**

Most local enterprises that depend on raw materials extracted from palm trees are inherited industries whose employees are amateurs rather than professionals. This means that all employees in such industries have other jobs besides that, as such industries lack required development to be a main rather than secondary job as is the case now. To turn into main industries, such industries should develop the technology they use and depend on so as to produce a product that complying with the market requirements.

The opportunity is on in the field of wood industry to develop the industries based on DPLM and to use them as a source to produce raw - wood used in different industries. By asking experts and specialists as well as employees in the field of processing palm leaves, it has been shown that 20 midribs of the palm leaves can be taken from a palm tree annually without causing any effect on the productivity of the tree or its life expectancy, which exceeds 50 years. On the contrary, taking care of and pruning the palm tree helps it grow well and raised its productivity.



**Photo (6.4): Some kinds of environmental furniture used in tourist villages produced from raw DPLM**

In terms of getting wood from trees, the wood from DPLM is considered more complying with the environment than wood of other trees. This is due to the fact that we should cut the other trees to get wood, which does harm to the environment. The matter necessitates planting new trees so as to preserve the environmental balance. However, in case of getting wood from palm leaves, we would not have to cut the tree. Thus, the palm tree provides wood throughout its life. Also, the palm trees in general bear desert environment where there is a dearth of water, which matches the Egyptian environment, which has 90% of its area desert.

In a special study by Centre of Development of SMEs and Developing the Local Technology, Faculty of Engineering, Ain Shams University, Egypt, it has been found out that one DPLM can give an amount of wood estimated at 1 kilogram after drying it (moisture makes up 10% of the palm leaves midrib weight). So, we can get 20541.66 tons annually from wood processed from DPLM which are considered as available and renewable raw material in the study area. Studies, carried out by the abovementioned centre on wood of palm trees, pointed out that the average density of the DPLM wood is 0.66 gm/cm<sup>3</sup> and the corresponding value of the beech is 0.65 and that of the spruce woods is 0.35. The wood manufactured from DPLM proved high quality when conducting tests of statistic bending, pressure resistance and tightening resistance, as its characteristics are almost like the beech's, but they are more distinguished than the spruce woods. Table (6.1) shows the results of tests carried out on wood manufactured from DPLM in comparison to the beech and the spruce wood:

**Table (6.1): Assessment the wood of DPLM compared with beech and spruce wood**

Type of wood	Statistic bending test KN/cm <sup>2</sup>	Pressure resistance test KN/cm <sup>2</sup>	Tightening resistance test KN/cm <sup>2</sup>
Palm leaves wood	13.5	6.75	8.1
Beech wood	13.7	7.4	9.7
Spruce wood	9.3	4.3	4.7

Source: Based on study about Palms leaves made by centre of SMEs development, faculty of engineer, University Ain Shams, 1997.

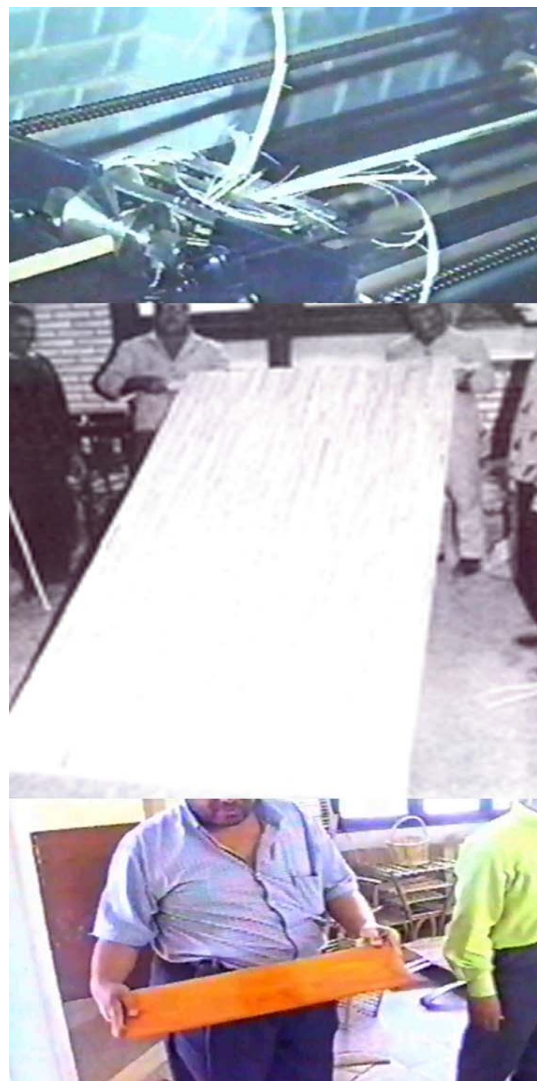
According to the previous tests, efficiency of the wood manufactured from palm leaves is not of less quality than other wood types known. However, it is better than other kinds of wood because it is local material that could be easily got and at the same time is renewable natural resource. There are social and economic dimensions that distinguish wood produces from DPLM than those produces from other trees, as it creates job opportunities in other small scale enterprises such as cutting of leaves and loading and down-loading them on trucks and karts. The latter operation creates job opportunities in the field of transport. Cutting the leaflets from the leaves also creates job opportunities. The leaflets are used in furniture industry (to fill the seats) or producing baskets, bags, hats and ropes, which all provide additional job opportunities. As for DPLM itself, it could be used after being dried as a raw material for manufacturing hutches in which fruits and vegetables are packed, manufacturing coastal bamboo-made chairs and tables or it could be used after being manufactured in the following products:

#### **a: Producing blockboards from DPLM**

Here, the rectangular and square cross section strips of DPLMs are used in making the internal straw of Blockboards. Then, it is covered with tow ply-layers (thickness 2 millimetres) of natural wood or from DPLM itself. The techniques, which are known by employees in the field of wood industry, will be used. It is worth mentioning that Blockboards are the basis of furniture industry, as they are considered the mainstay of such industries, as shown in photo (6.5).

#### **b: Producing arabesque units from DPLM**

It is the simplest product using DPLM without any need for huge devices, compresses or production lines, as was the case with Blockboards or Particleboards wood, as we need only a lathe attached with saw unit for preparing palm leaves. It is worth mentioning that arabesque products (photo 6.6) are highly required not only in Egypt but also in many Arab countries. Also, the technology used in such an industry is local one that can be easily learned or trained in. this helps qualify many idle employees including women and provide suitable job opportunities for them, a matter which helps the latter to curb poverty, which is considered the main aim of sustainable development. Several centres for spreading arabesque industry were set up in the New-valley, Qena and Aswan governorates so as to train people there especially women and housekeepers. The results were highly positive on the level of learning the industry and the level of product quality, which attracts the attention to the importance of training centres for developing SMEs especially in the study area.



**Photo (6.5): Method of producing the blockboards wood from DPLM**



**Photo (6.6): Some arabesque products produced from DPLM**

**c: Producing blocks substitute to natural wood from DPLM**

The studies conducted in SMEs and Local Technology Development Centre, at Faculty of Engineering, Ain Shams University, Egypt succeeded in producing blocks from DPLM to be used as alternative to natural wood, see photo (6.7). All works of carpentry were carried out on it successfully.



**Photo (6.7): Producing blocks of wood from DPLM and some products produced from them**

**d: Producing plywood and particleboards from DPLM**

To get such a product the palm leaves are turned into 1mm or lesser strips. Then such strip is made in the shape of straw. The straws are compressed together to get the plywood at the required thickness. Such a technology is successfully used in producing plywood from bamboo in South-east Asia. In the case of particleboards, DPLM are milled and turned into small pieces through hammer mill. It can also be mixed with other kinds of wood in order to get particleboards using the same technology used in producing conventional Particleboards, see photo (6.8). The results of test carried out on such a product augured well (El-Mously 1997).



**Photo (6.8): One particleboard produced from DPLM**

It can be deduced that DPLM are already considered local raw material alternative to imported wood and can be used in producing all types of wood used in different wood industries either furniture, cabinetworks, doors, windows,



frames or different of ornaments. Depending on DPLM as an alternative to imported wood will protect the environment and keep resources to the coming generations on the one hand and will save hard currency by which wood is imported on the other hand in addition to creating new job opportunities such as getting palm leaves, transporting them, separating leaf fibres from them and other industries.

Besides, it creates more job opportunities such as preparing the raw materials of wood required in wood industries like Blockboards, Particleboards or plywood boards in addition to preparing wood blocks used in manufacturing doors and windows. This means the emergence of chain of new activities related to palm leaves. On the contrary, importing raw-wood leads to cancelling most of previous activities. The question now is: Are the currently available amounts of palm leaves sufficient to provide all enterprises of wood sector in the study area with their needs of raw materials? This is what will we know in the following paragraphs.

#### **e: DPLM' ability to supply the wood sector in the study area with its needs of raw materials**

The number of small scale enterprises operative in wood industry in the study area reaches about 1120 in the year 2002. According to the field study, the average consumption of wood of each enterprise reaches 4.5 cubic meters per month, i.e. each enterprise consumes about 54 cubic meters of wood annually. The field study showed that Ismailia governorate has about 1.03 million palm trees and that each palm tree gives the average of 20 palms leaves annually. The weight of wood that can be got from a palm after separating leaflets and drying it is 1 kilogram. This means that we can get 20541.66 tons of wood annually. If we take into consideration the specific average density of DPLM (0.66 gm/cm<sup>3</sup>), we will get 31123.7273 cubic meters of wood annually, an amount that will be able to meet the needs of about 576 enterprises operative in the field of carpentry and wood industry in the study area.

This means that 51.5% of enterprises working in wood industry in the study area will be able to get their needs of wood through a local renewable natural resource, thus reducing the costs of transport and its environmental negative impacts as well. On the other hand, other new enterprises will be created in the region like enterprises in the field of preparing wood boards. Those new enterprises may reach, according to experts in that field, 50 new enterprises at a productive capacity of 1.73 cubic meters daily per an enterprise. Each enterprise will take on 10 employees on average. This means that we can provide 500 new job opportunities. Moreover, we can set up 60 new enterprises in the field of separating leaflets from palm leaves at a capacity of 2 tons daily per enterprise. Each enterprise will take on 10 employees on average.

Most employees in such enterprises may be women. Furthermore, we can also set up 60 additional enterprises to work in the field of carina industry (materials can manufactured from leaflets) used in filling the seats in furniture and cabinetwork industry at a productive capacity reaching 2 tons daily/enterprise. Each enterprise can take on 10 employees. This means that besides satisfying needs of 576 enterprises of employees in the wood industry in the study area, we can set up not less than 170 additional enterprises depending on palm leaves products related to furniture industry. According to experts, such enterprises will create not less than new 1700 job opportunities.

#### **6.2.2 Wood manufactured from parts resulting from pruning fruit trees**

Fruit trees in general are considered a good source of wood. This resource has not considered in Egypt till now. As they are always away from the production system in Egypt lest this should impact on the productivity of such trees of fruit, which is considered their main product. We do not mean that we

will cut such trees to be used as a natural source of wood. But we mean that we can exploit only the pruning parts of fruit trees as a source of natural wood instead of the current use as a source of energy and fuel or getting rid of them without any benefit, squandering a natural renewable source.

It is worth mentioning that studies carried out on the parts resulting from pruning fruit trees indicate that wood from such trees has high potential in comparison to beech and that it can be shaped easily, see photo (6.9). At the forefront of the trees that proved high efficiency in such a field are mango, orange, lemon, grape, fig, peach, pear, olive, apple, apricot, and guava trees. Experts in this field say that if we follow the right annual pruning system of such trees, we will be able to get amount of wood throughout the tree life expectancy exceeding that obtained from wood trees, which are used only one time. Ismailia Governorate is distinguished by the concentration of several kinds of those trees such as olive, mango, citrus (lemon and orange) trees. Table (6.2) illustrates the expected wood production from parts resulting from pruning fruit trees according to the tree kind.

Pruning fruit trees in the study region annually can supply wood products market with about 72 thousand tons of wood annually. If we take into consideration that the specific average density of the wood produced from fruit trees reaches  $0.79 \text{ gm/cm}^3$ , the volume of wood that can be got in that case will rise to 91.2 thousand cubic meters annually for a period reaching 20 years at least. Moreover, if we take into consideration the fact that the small enterprise's consumption of wood reaches 54 cubic meters annually, the amount of wood produced from pruning fruit trees will be sufficient to meet the needs of approximately 1688 enterprises.

This means that it will satisfy the needs of all SMEs operative in the sector of manufacturing wood in the study area. Moreover, new enterprises will be created in the field of preparing wood resulting from pruning fruit trees, transportation and storage. The experts estimated such new enterprises at a rate exceeding 20% of the basic enterprises, i.e. approximately 337 new enterprises will appear to prepare wood materials.



**Photo (6.9): Wood resulted from mango trees accepts all kinds of formation**

**Table (6.2): Estimation of the products of annual pruning of fruit trees in Ismailia – Egypt**

No	Fruit crop	Agricultural area in feddan	Average of tree numbers/ feddan	Productive life of a tree, years	Average rate of annual pruning in Egypt (Ton - green per feddan)	Amount of products of annual pruning of total agricultural area	Coefficient of pruning (oven dry wt. of products of from pruning)	Amount of total annual products of wood per ton
1	Mango	45428	80	55	3	136284	0.41	55876.4
2	Oranges and Lemon	14053	160	24	2	28106	0.25	7026.5
3	Olives	10705	160	35	2	21410	0.34	7279.4
4	Grapes	781	800	33	5	3905	0.32	1249.6
5	Figs	97	160	44	2	194	0.44	85.36
6	Guava	160	160	45	2	320	0.24	76.8
7	Apricots	217	160	25	1.5	325.5	0.23	74.865
8	Pears	148	160	20	2	296	0.30	88.8
9	Apples	319	160	24	2	638	0.28	178.64
10	Peaches	70	160	20	2	140	0.41	57.4
11	Total	71978	..	..	2.7	191618.5	0.38	71993.8

Source: Adopted by the researcher based on data issued by Ismailia governorate, 2003

### 6.2.3 Wood trees planted on the water of treated sanitary drainage

It is worth mentioning that Ismailia has an ambitious project to plant wood trees depending on treated sanitary drainage water. The first stage of that project, 500 feddans\*, has already started since 1998, an area which will reach 5000 feddans by 2010. The project location was visited, see appendix no (6.1). 400 feddans out of the project area were already planted with timber trees. Each feddan has the average of 400 trees. Cutting cycle will start as of 2008, as one tree out of every 12 will be cut down and replaced by another one. Each tree will give the average of 2 cubic meters of wood (photo 6.10).

This means that the SMEs, operative in the sector of wood processing in the study region, are able to depend on local raw materials of wood resulting from either forest wood or palm leaves or fruit trees in a way that is sufficient to operate 2757 enterprises, only 1120 out of which are currently existent. This means that we can set up another 1637 enterprises depending on renewable local raw materials and at the same time a chain of parallel enterprises and activities will emerge in the field of transporting, storing, and preparing raw materials for industry amounting to 20% of the number of main enterprises, i.e. about 556 enterprises related to the main activity of wood processing so that the total number of small enterprises that can be set up in the region will reach 3423.



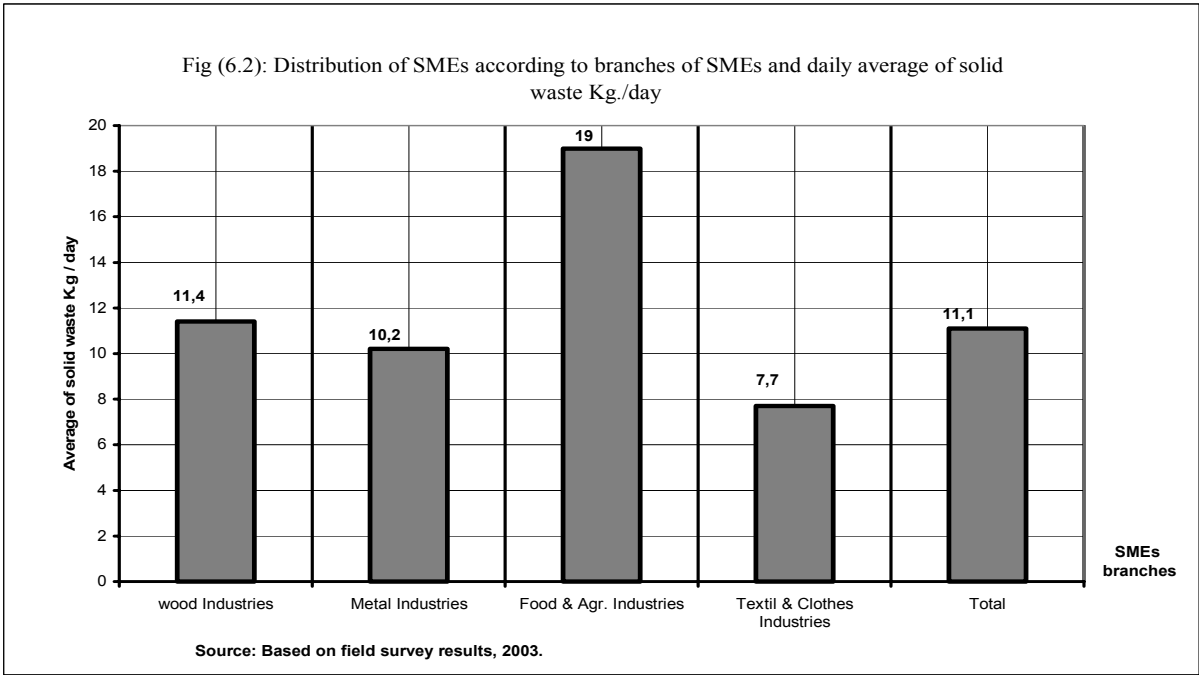
**Photo (6.10): Project of wood trees planted on the water of treated sanitary draining in Srabium in Ismailia, First phase 500 feddans**

\* One feddan = 4200.38 m<sup>2</sup>

So, the SMEs in the study area have a big ability to lead the economic activities in the region and that there is a big opportunity for them to play a main role in achieving sustainable development through depending on local alternative renewable raw materials, that have not been sufficiently exploited till now. According to the researcher, this will happen only in the existence of integrated production system inside the region. Such a system starts from studying the market requirements and defining its needs and the gaps that SMEs can redress and then running the use of raw materials efficiently to produce high quality product matching such needs. Such operations will generate job opportunities accommodating all skills, which helps to reduce poverty and unemployment inside the region – a main aim of sustainable development.

**6.2.4 Reusing solid waste resulting from production processes**

At present, SMEs in the study region do not exploit the possibility of recycling solid waste resulting from production process, as the ratio of enterprises that reuse such waste in producing secondary products does not exceed 20% of wood enterprises in the study area. While the majority of the enterprises in the study area get rid of this waste either through throwing it into garbage without sorting it, thus polluting the environment, or giving it to companies operative in field of garbage collecting in return for a monthly sum paid by the enterprise. In two cases, the enterprise misuses a secondary resource that can be reused in the production process. Some enterprises sell this waste at cheap price to secondary users who mostly use it in a way that does harm to the environment. Fig (6.2) illustrates average volume of solid waste resulting daily distributed according to the industry kind.



According to Fig (6.2), the average volume of solid waste resulting from enterprises working in wood sector is about 11.4 kilogram daily/enterprise, while its volume in metal industry sector reaches 10.2 kilogram daily/enterprise; foodstuff and farm industry sector, 19 kilogram daily/enterprise; and textile and clothes sector, 7.7 kilogram daily/enterprise. The average volume of such waste in the study area is about 11.1 kilogram daily per enterprise. If we take into consideration the fact that the study area has 2800 enterprises in the above-mentioned four sectors, the volume of solid waste resulting from such enterprises will reach 31 tons daily.

The problem in such waste lies not only in its big volume and negative effects on the environment but also in the fact that it is a resource that can be used, if it is recycled, as secondary raw materials which can be used again in the production process. The solid waste from wood industry could be used in producing blockboards and particleboards or in manufacturing frames instead of getting rid of or selling it at low price. Also, waste resulting from metal industry could be re-melted to be used as a raw material. Moreover, the waste resulting from foodstuff and farming industries could be reused in manufacturing fodders or fertilizers. As for waste of textile and garment industry, it could be used in carpets, druggets and linings industry. These are all available opportunities for the SMEs in the study area to do effective role in achieving sustainable regional development.

For example, in the wood sector, if we well use the resulting solid waste, the SMEs in that sector will be able to provide new job opportunities and will help to reduce the harmful environmental effects of such waste. It is worth mentioning that the volume of solid waste resulting from wood sector SMEs in the study area reaches 11.4 tons daily. According to experts, about 13 new enterprises at least can be created to recycle such wastes and use them to produce blockboards or particleboards wood. The average number of employees that can be taken on in each enterprise is 10, i.e. 130 new job opportunities based on recycling wastes in the wood sector will be born. The other sectors have also opportunity to create more new job opportunities, if solid waste is considered as a resource that can be reused. So, the SMEs in the study area will help create job opportunities inside the region. This, in turn, will reduce unemployment rate and raise the standard of living inside the region, which is a main aim sought by the sustainable development.

### **6.2.5 Summary**

The aim of this topic was to test the hypothesis saying that SMEs have the ability to develop and maximize their access to and processing of local raw materials that can be imported from the regional and national levels; this is an opportunity that has been tapped on a limited scale to date.

At present, the vast majority of SMEs in the study area depend upon raw materials that are either imported from abroad, as in the wood sector, or from national markets; this importation process only serves to exacerbate the already existing negative environmental impacts from transportation. The research reveals that the dependence of SMEs on alternate local raw materials will minimize the resulting environmental impacts from the transportation of these raw materials while reducing overall transportation costs. Therefore, the cost of production would conceivably be reduced, allowing the enterprises to pass on this reduction to the consumer in the form of reduced prices. Furthermore, the final product would then have the added advantage of being more competitive in the marketplace. In addition, the action of facilitating access to local raw materials instead of maintaining continued reliance on imported raw materials from abroad or elsewhere within Egypt will foster the creation of new job opportunities, in the areas of raw material processing and finishing, that did not previously exist within the region.

According to research findings, these facts, when taken altogether, constitute the broad basis for achieving sustainable development. However, generally speaking, neither SMEs nor the local decision-makers influencing SMEs, has considered the use of these available local raw materials in their production processes thus far. Yet, it is evident that reliance by SMEs on local raw materials for their production requirements would be of vital importance to enhancing the role the SMEs sector can play in regional development. This research has illustrated, using this point of view as a basis, an analysis of the potential for use of local raw materials within the woodcraft sector since this particular

sector is the most dependent on imported raw materials. (More than 70% of enterprises in this sector depend on raw materials imported from abroad.)

Many local, renewable alternatives to produce wood in the study area were identified. These include timber obtained from palm trees, residue from fruit trees (i.e., fruit farms) resulting from pruning, and tree farms (i.e., grown for wood product production) irrigated with treated sanitary wastewater. Use of these local timber resources has proven to be competitive for SMEs, to a large extent, with that of imported timber. Furthermore, the supply of local timber resources is ample enough to be capable of providing current and future raw timber needed by the SMEs that work in the wood industries in the study area. By relying on the local area to supply needed natural resources, SMEs will help to create new job opportunities within the region that did not exist before. These jobs would include new jobs within the wood industry sector and jobs that result from related service activities within the region.

If the SMEs in the study area depend solely on local, rather than imported raw materials, then the total number of enterprises that can be created in the field of wood industry will reach 2,324. The Ismailia governorate has 20,000 unemployed persons; this represents about 8.8% of the respective labour-force. The opportunity is then available for SMEs to draw from this pool of unemployed persons and by so doing reduce a substantial portion of the unemployment at the both the regional and national levels. The wood sector alone is able to provide approximately 23,000 future job opportunities on a regional scale. This will help to solve the unemployment problem at the regional level which is considered to be one of the most important goals of sustainable regional development.

It should be noted that all small industry sectors in the study area possess great potential to recycle and reuse manufacturing residues and solid wastes resulting from manufacturing processes. These materials should be considered as a secondary resource of raw materials rather than being seen as unusable and discarded as waste only to contaminate the soil and the environment. For example, sawdust and scrap wood/rests (i.e., small wood processing by-products) can be used once again in the manufacturing of compressed wood boards or particle board. It is also possible to collect metallic wastes and melt them to reproduce metallic raw materials. Wastes from agricultural and nutritional manufacturing can be used as animal fodder or in the manufacturing of soil fertilizers and manure. Solid textile wastes can be used in manufacturing carpets and rugs, and waste water from textile dyeing processes can be utilized once again in subsequent dyeing processes.

These types of actions and measures will undoubtedly help to protect the environment, on one hand, while achieving economic benefits, on the other hand. In addition, the research concluded that by supporting the strategy of using alternative raw materials within the region, this action will help to solve the unemployment problem and provide job opportunities for weaker groups within the region (i.e., women and unskilled labourers). Subsequently, poverty will be reduced within the region and the standard of living will rise; thereby, the aim of sustainable development will be achieved. However, this potential cannot be effective- from the research's point of view – in the absence of the presence of an integrated system of SMEs to enhance the position, recognition, and existence of SMEs within the economic core of Egypt's national economy. At the same time, a system such as this would further serve to create and establish a type of cooperation and integration among SMEs.

### **6.3 SMEs' ability to exploit work through manufacturing system**

This topic aims to test the hypothesis stating that the SMEs have the ability to achieve sustainable development in the region if they adopt a strategy of working through industrial groups and clusters. Such potential, however, is used limitedly. It is necessary before discussing such a hypothesis to first shed light on the significance of the concept behind industrial clusters and production lines.

#### **6.3.1 Clusters and networks - Concepts and definitions**

SME clusters are a noteworthy form of industrialization in developing countries functioning as a means to improve the competitiveness of SMEs within the global economy. Clusters and networks of enterprises offer important advantages to SMEs by allowing them to achieve dynamic competitiveness collectively, rather than as individual enterprises. These supportive institutional settings provide the appropriate framework or vehicle for intervention from supporting institutions and groups. Traditionally, SMEs supporting policies were designed to provide assistance to the poorest citizens. At present, these policies go much further. They aim to promote a thriving private sector and secure more sustainable growth for SMEs (El-Mously 1997).

Clusters and networks have proven to be effective tools of industrial policy in developing and developed countries seeking to address social and economic objectives and to enhance the competitiveness of SMEs. If SMEs in Egypt are to improve their competitive advantage and integrate themselves more effectively into the global market, they must, subsequently, overcome various disadvantages associated with their isolation, size, and weak capital base. Among the main constraints facing most of these enterprises are the difficulties of accessing information and financing and the inability to meet the volume and quality of production required by foreign buyers. To surmount these difficulties and improve their competitiveness, manufacturing SMEs should seek collective inter-firm cooperative efforts in the form of interactive support within institutional settings throughout all stages of production and demand chains. Accordingly, these frameworks must extend beyond the sector to include all forward and backward linkages in the production process, including suppliers, consumers, competitors, service providers, and related or supporting industries.

International experience has shown that these frameworks offer specific and important advantages to SMEs by allowing them to achieve levels of efficiency and competitiveness collectively, well beyond their reach as individual enterprises (referred to below as “collective efficiency” and “collective competitiveness”). Several kinds of collaborative frameworks exist, such as clusters, networks and other self-help groups. They all provide SMEs with a dynamic and collective competitive advantage based on innovation, learning and economies of scope. Clusters, networks and industrial districts represent different types of inter-firm cooperation. Institutional collaboration is quite dynamic, as it often promotes collective learning and innovation. This feature of collaboration is developed with policy makers, development agencies, and providers of enterprises development services (BDS). These relationships help to create a more favourable enterprises environment, one that is more supportive of entrepreneurial activity and collective initiatives (Ceglie and Dini 1999).

The term ‘cluster’ is defined, in this context, as a sectorally and geographically concentrated group of enterprises that produce and sell a range of related or complementary products (Nadvi 1995), and thus face common challenges and opportunities. These opportunities give rise to: (a) external economies, such as those contingent upon the emergence of marketing agents or specialized suppliers of manufacturing inputs, or the growth of a pool of sector-specific skills in technical, financial, and accounting matters; and (b) a network of public and private local institutions that support local

economic development, promoting collective learning and innovation. However, the mere concentration of enterprises in the same location is no guarantee of success, as the advantages associated with clustering will not necessarily emerge automatically. The evolution of a cluster is a slow process, bearing in mind that the focus of its activity is a long-term one concerned with deeper enterprises commitments such as common marketing, information sharing, joint human resource development (training), infrastructural development, or the formation of policy. Clusters are alike, insofar as they normally consist of enterprises operating in the same sector and located in a certain geographical area, but they can assume different forms, namely, artisanal, rural, micro clusters, or others (ESCWA 2001).

Different types of SME clusters require a support policy of different complexions depending on the technological intensity of the enterprises in the cluster, the frequency of change in the cluster, and the level of coordination among the enterprises (ESCWA 2001). For example, enterprises in innovative clusters are knowledge-based; support to these clusters must be focused on adaptations of technology and the design of new products and processes. In traditional activities, such as textiles and garments, leather and shoes, or food processing, assistance must be given in the areas of quality improvement, standards and specifications, joint purchase of raw materials, or marketing.

In this context, the concept of ‘clustering’ refers to the overall action of establishing inter-firm relationships characterizing both networks and clusters. Clustering development services denote those services aimed at promoting the development of networks and clusters. The term “networks” refers to enterprises relationships that link together geographically dispersed enterprises and their agents drawn from various sectors (Nadvi 1995), and they are usually conceived as a tool designed to attain a certain objective. As a result of this, network formation is a continuous process. Normally, networks are a group of enterprises that cooperate on a joint development project complementing each other and specializing in order to overcome common problems, thereby, achieving collective efficiency and conquering markets beyond their individual reach. Cooperation between enterprises, mutual learning and collective innovation can exist even in the absence of large clusters of enterprises. Networking of SMEs is not necessarily tied to geographical proximity, yet it can still lead to collective efficiency. The external economies tend to be small, but the gains from joint action can be substantial (ESCWA 2001).

Clusters and networks are a means to enhance SMEs competitiveness. The phenomenon of SME clusters was first identified in Italy in the late 1970s (Rabellotti 1995). They looked at the now famous “Third Italy” phenomenon, which attracted a good deal of interest among enterprises scientists and led to a great deal of research into similar modes of organization in other industrialized countries. The idea of a so-called “Third Italy”, comprising the north-eastern and central parts of Italy, arose out of dissatisfaction with an oversimplified picture of a country divided into a rich northwest and a poor south (Stocchiero 2002).

It is agreed among researchers that the important role played by SMEs in the Italian economy is largely the result of the organization of the economy into clusters. Italy represents one of the most successful examples of clustering, and remains the main reference point in academic and policy debate on SME clusters. Successful examples of industrial districts of SMEs in developed countries such as Italy, Germany, or Spain have inspired research on clusters in developing countries. Such research has revealed similar examples in developing countries, suggesting that the phenomenon occurs in many different countries and sectors (Stocchiero 2002).



Clusters and networks emerge either spontaneously, as is frequently the case in developed countries, notably in Italy, or as a result of dominant initiatives and government linkage-inducing support policies, as in Denmark, or many developing countries and regions, such as Chile. In any case, the question becomes whether or not market forces will alone produce a near-optimal level of inter-firm cooperation, given that socially desirable cooperation is normally predicated upon either low transaction costs or a high level of trust or both. However, effective intervention policy will be based on rules of best practices, and these are, for the most part, complementary to market forces. Several experiences in different parts of the world attest to the ability of enterprises to improve their competitive advantage by addressing disadvantages related to their isolation, size, and weak capital base (Ceglie and Dini 1999).

Forms of collaborative inter-firm relationships, networks or clusters, may be horizontal with other SME competitors, or vertical with other SMEs along the value chain. These arrangements help enterprises to harness their potential collective competitive advantage. These institutional frameworks improve the competitiveness of the enterprise. Through horizontal cooperation, that is cooperation among SMEs along the value chain, enterprises can achieve economies of scale and scope together in marketing far beyond their reach as small individual enterprises. They can also attain internalization of functions including market intelligence and training, bulk purchase inputs, and optimal utilization of machinery while bringing together their production capacities to meet large scale orders.

In addition, they can collectively acquire specializations that are complementary within the group, achieve effective division of labour, benefit from accelerated learning through the emergence of a collective learning space, “invisible college,” and become “habitually” innovative (Ceglie and Dini 1999). Through vertical cooperation, with other SMEs, as well as with large enterprises, enterprises can concentrate on their primary enterprises, allowing for and giving way to an external division of labour. In both horizontal and vertical inter-firm cooperation, collaborative relations increase access of the enterprise to strategic information and accelerate the learning process through the collective learning space, whereby, ideas are exchanged and developed and knowledge is shared in a collective attempt to improve product quality and occupy more profitable segments of the market (Nadvi 1995). Inter-firm cooperation advances collective flexibility and responsiveness to market challenges (UNIDO 1995). Collaborative strategies, likewise, enhance the flexibility and institutional reflexes of the enterprise, entrepreneurial skills, innovation, productivity, design, quality, and optimal use of endogenous resources, releasing the collective potential of independent small enterprises (ESCWA 2001).

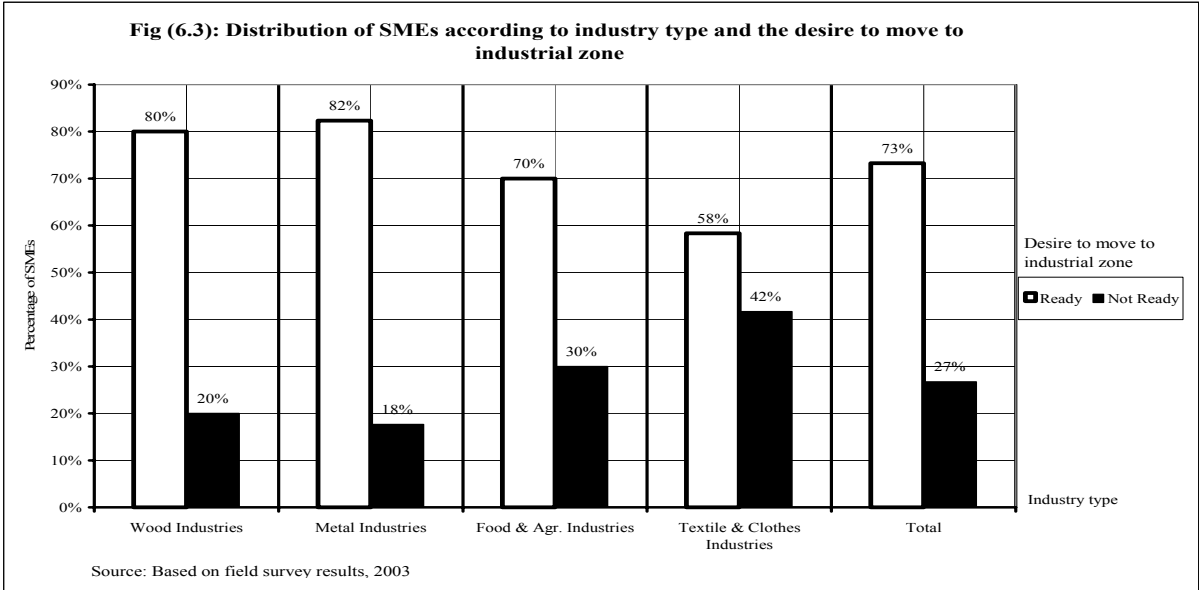
We can say that the opportunities and successes that can be achieved by SMEs in the field of sustainable development will be greater in the case where SMEs work through industrial clusters and groups rather than working separately. The advantage of cooperation and clustering will make the SMEs better able to achieve their private goals in terms of profit and, subsequently, continuing at the enterprise level. Meanwhile, they will be able to play an important role in the sustainable development in the region, as they will help to foster the emergence of a chain of activities relating to their levels of production, as well as the levels of demand and marketing. This will help provide many job opportunities within the region. Furthermore, this will lead to reducing unemployment and poverty, not only at the level of the Ismailia governorate but perhaps extending into and including neighbouring areas and governorates.

Moreover, work through industrial clusters and groups will facilitate the process of preserving the environment through the enterprise of unified industrial drainage networks for each cluster or group of similar industrial clusters. This, afterwards, will facilitate the implementation of required treatment of liquid wastes and will facilitate recycling solid wastes. Also, the transportation distances of raw materials will be as short as possible. This, in turn, will help reduce bad environmental effects. This cannot be achieved in light of the individual work of the SMEs and the absence of industrial clusters and groups. However, the question now is: Do the SMEs in Ismailia governorate already have the desire to work through industrial clusters and groups? Is there any potential available at the level of the Ismailia governorate to facilitate the work of these clusters? Do any complete or partial industrial clusters exist within any industry? This is what will be discussed in coming paragraphs.

**6.3.2 The SMEs' desire to work through industrial clusters**

As we said before, for the SMEs to work through industrial clusters, they should exist in a one geographic zone. The status quo points out the spread of SMEs in general in Ismailia governorate inside the residential areas makes it difficult for such SMEs to work through a one network or industrial cluster for two reasons: the first is the environmental and social side effects caused by such clusters and networks inside the residential area. The second is the difficulty of using the existing narrowness movement paths to link and connect these enterprises, in the light of the existing tangle of activities and land-uses in the residential area. This empties the industrial cluster from its essence, which aims to accelerate the achievement of contact among the enterprises.

The success of the industrial cluster or network in the study area hinges on the movement of these enterprises to the industrial zone inside the governorate. Thus, the study conducted a poll on the desire of existent enterprises to move to the industrial zone. Fig (6.3) shows that about 73% of the enterprises' owners have the desire to move to the industrial zone and are ready to do so. But they want to get governmental exemption from tax like large scale industries in the new cities (for 14 years). Furthermore, some owners want to get the land on which the enterprise will be set up for free or even for a token price for the square meter. Another want the state sets up a fully equipped industrial complex (has complete infrastructure), and entrepreneurs own industrial units provided that they pay the price through instalments with no interest.



Some of those who expressed readiness to move the industrial zone stipulated that the current premises of their workshops remain their own to be used as exhibition for products and commodities inside the mother town. Those opposed the idea, are socially linked with the current community and they could make a market inside this community. They fear that if they move to the industrial zone, they will lose this market they hardly made throughout the work successive years. Most of those enterprises are service rather than productive ones and most of them are connected with clothes and foodstuff industries.

On the other hand, metal industries topped the list of the industries desiring to move to the industrial zone, followed by wood industries, while foodstuff industries came third in terms of the degree of the desire to move. Garment and textile industries came at the bottom of the list. Generally, the percentage of 73% that welcome movement to the industrial zone whatever conditions are is considered big. The state no doubt has to support and help SMEs to achieve the development aims either on the regional or national level. The state role should not stop at the stage of financial support but rather it should include technical support, encouraging initiatives and innovations so as to set up small industrial clusters and entities.

### **6.3.3 The available potential of the industrial zone in Ismailia Governorate**

In spite of the extent of the industrial zones in the governorate, allocating part for SMEs was not included in the development programme of these areas except 25 feddans in the second industrial zone of Ismailia which was allocated for SMEs. It is worth mentioning that the number of workers in the selected small scale enterprises sectors (wood, metal, foodstuff and agricultural and textile and garment industries) reaches 9719. Such a number of workers needs, according to the Egyptian standards, an area estimated at 243 feddans, on the basis that the general density of workers in the industrial area equals 40 workers per feddan. This will be sufficient to accommodate all current enterprises, 2797 in number. Besides, the workers also need the provision of basic and environmental services, roads, green areas etc.

According to the researcher's viewpoint, setting up industrial complexes for SMEs in the study region should take into consideration the probable future expansions and the development and the growth of these enterprises. So, it is shown that the available industrial zones in the governorate of Ismailia have big potential to accommodate such industries either through a concentrated in one of these zones or distributed among the three zones. According to the researcher's point of view, distributing the SMEs to the three zones will be better than concentration in one zone, especially as the longest distance separating such zones does not exceed 45 kilometres. Furthermore, the distribution of SMEs to the industrial zones will encourage workshops' owners to move to the zones near to their original work of place. Thus, distribution of the industrial zones in Ismailia governorate is considered big potential helping the formation of industrial clusters and also will facilitate the work of these clusters.

### **6.3.4 Industrial clusters of SMEs in the study area**

Cooperation among SMEs is considered an overwhelming characteristic in all kind of industries in the study area, as it is rare to find a small enterprise in the study region works separately. The smaller the enterprise the more it needs cooperation with other enterprises to produce the end product. However, such cooperation is incomplete and we can call it partial cooperation and sometimes call it semi-full cooperation. The partial cooperation is to finish stage of manufacturing the end product in another enterprise. For example, the small carpenter's enterprise seeks the help of mechanical enterprises in preparing pieces of wood required to produce certain wood product in return for certain sum of money

to be paid each time. The same applies to the clothes industry, as the small enterprises seek the help of specialized machines (like buttonhole and decorative machines) in larger clothes-manufacturing enterprises also in return for a sum of money. The same applies to all kind of industries.

As for the semi-full cooperation, which it is called production lines, it is more obvious in wood industry in the study region, as the end product is produced in association with many enterprises at the same time. For example, when manufacturing the furniture of bedroom or saloon, this needs a design in a enterprise, which in turn prepares wood and assembles it as required, and then the product is painted in another enterprise. It is upholstered in a third enterprise. A fourth enterprise undertakes the task of sticking glass and mirrors to it. Then, the product goes to the first enterprise to be given to the customer. So, four enterprises participated in manufacturing the product and sometimes five enterprises if we add arabesque works in some products (photo 6.11).



**Photo (6.11): One of the existing lines of production among SMEs of wood and furniture industries in the study area**

The study considers the current production line in the study area as a semi-full cooperation because the enterprises in the study area are not neighboured. All these processes need transporting the product for over 3-kilometer distance sometimes. All the enterprises get sums of money in return for the work they do, while the responsibility falls on the first enterprise that concludes the deal with the customer on the design and the final price. The first enterprise is the main beneficiary in that deal. This means that such enterprises do not work for a joint aim even if they participate in one product.

Moreover, the role of the industrial cluster does not stop to producing end commodity in association with all enterprises in the cluster, but rather it studies the market well knows its needs and then it produce end product suiting these needs. Then, the cluster markets this product. Such a system is incomplete in the case of small enterprises in the study area that cooperate with each other in the stage of the end product only. Generally, cooperation among different enterprises in the production system or in one of the episodes of this system no doubt leads to the success of such enterprises and makes up a motive for them to continue.

According to the field study, the enterprises that cooperate with others in marketing their products are the most stable ones that are more able to market their products periodically and the least ones facing structural problems in the production system. The Fig (5.9) shows that about 75% of enterprises cooperating with other institutions to market their products and 50% of the enterprises that fully depend on other institutions to market their products do not have problems in the production system. The latter percentage goes down in the case of the enterprises that independently market their products to 33% only.

The Fig (5.10) shows that no less than 33% of the enterprises that independently market their products depend on the type of in advance order to market their products. This type, as we previously said, negatively impacts on the ability of the enterprise to continue because it causes temporary unemployment in the enterprise till another order is placed. Such a suspension may reach several months in some enterprises and may not exceed several days in some others, but finally it threatens the enterprises with the spectre of closure of bankruptcy.

On the other hand, no less than 10% of enterprises ultimately depend on other institutions to market their products and no more than 6% of the enterprises that cooperate with other institutions to market their products make to order. The enterprises that produce either weekly or daily do not exceed 59% in the first case, 90% in the second case and 79% in the third case. This is a proof that the adoption of the strategy of industrial clusters in the SMEs will no doubt lead to the sustainable development in such enterprises by making them more stable and able to compete. At the same time, it helps to move the chain of other activities relating to SMEs, which in turn helps to provide new job opportunities and consequently reduce unemployment in the region, an aim sought by the sustainable regional development.

### **6.3.5 Summary**

The aim of this section was to test the hypothesis saying that SMEs have the ability to achieve regional sustainable development only if they adopt the strategy of work through industrial clusters and groups. However, such potential is limitedly exploited in the present. The industrial cluster is defined as a group of enterprises that work within the same industry which are physically located within one geographical area. These enterprises produce and sell a group of related, integrated products, and the industrial cluster has one joint aim. The role of the industrial cluster is confined to producing end commodities in association with a group of enterprises (the production lines) preceded by the appropriate market studies, design of suitable products to meet market needs and selection of the best technology for producing these products. This is followed by the marketing of the end products to regional, national or international markets. This means that the industrial cluster is an integrated cluster that encompasses the production system in its entirety.

It has been found out that there are forms of incomplete cooperation among the SMEs existing in the study area. Some forms of cooperation are partial and phased-in such as in the form of resort dependence of some enterprises on others for specialized manufacturing processes in return for sums of money. Other forms of cooperation are semi-full cooperative situations in which a group of enterprises cooperate with other entities from within the group to produce end products (the idea of production lines); each enterprise works separately without shared goals with the others. Moreover, there is also cooperation between some small enterprises and other institutions to market end products. A limited degree of cooperation currently exists among some SMEs in the target area. However, a widespread, formal level of cooperation, as well as encouragement by relevant authoritative bodies, must be developed in order for SMEs in the area to reach a stage whereby working together in industrial clusters and groups is possible.

By using industrial clusters and networks, SMEs can overcome the obstacles related to their isolation, size, weak capital base, poor access to information, limited finances, and volume and quality of production, as well. SMEs can improve their competitive edge and efficiency through these collaborative efforts. Those that are part of industrial clusters can gain two advantages: 1) improved flexibility and 2) rapid reaction time therefore rendering them more competitive than larger firms and

without the handicap of size. Although there is much evidence that the SMEs can gain significant benefits from inter-enterprises cooperation, it seems that clusters and networks do not usually develop on their own, especially in the developing countries. However, these problems can be handled through initiatives aiming at developing these cooperative systems. The research sees that the government has to adopt policies backing such initiatives so that such clusters and networks come to the surface as is the case in most developed countries and some developing countries.

The research concludes that physical allocation of SMEs enterprises in one geographical area will help to facilitate the reduction of negative environmental impacts while facilitating opportunities for joint recycling of solid wastes; the minimization of time needed for dealing with wastes; and the reduction of transport distances and costs for the various products and wastes throughout the stages of processing and production. Overall, this will help to create a chain of associated activities at all levels - production, final product and marketing levels. There will be a need for such enterprises as transportation, storage, waste recycling, raw material preparation, as well as marketing, enterprises; none, of which, exists under the current individual enterprise system in the study area. These operations would have been confronted by extreme difficulty given the current situation of dispersion of SMEs throughout populated urban areas in the region. This recommended action will ultimately lead to an increase in available job opportunities within the region and a decrease of unemployment, thereby, raising the standard of living and reducing poverty. It is these results that are considered the main objective of sustainable development.

This research has also documented some relevant indicators pertaining to the stability of SMEs. One of these indicators is that enterprises cooperating with one another, or with other institutions in the marketing of their products, are the least likely to be exposed to structural problems in production processes and the most likely to be involved in marketing final products on a regular basis (i.e., daily or weekly). Therefore, these SMEs are also the most economically stable enterprises in the study area. This is considered proof that the reliance by SMEs in the study area on strategies that support the creation of agglomerations, networks or industrial clusters will increase opportunities of success for these enterprises and enhance their role in regional sustainable development.

Moreover, it has also been revealed that there is the possibility to physically allocate present and future enterprises in the study area within the industrial zones. It should be noted here that the maximum number of labourers per feddan in industrial areas should be 40 or fewer labourers/feddan, a standard that will be adequate for establishing an integrated zone of SMEs. This zone would include an entire road network, primary services and green areas that play a major role in the reduction of pollution resulting from production processes. In addition, this zone would also include areas designated specifically for recycling wastes, liquid waste treatment, and raw material storage. Furthermore, designation of particular areas would be allocated according to type and specifications of each industry.

#### **6.4 Conclusion and results of the chapter**

The aim of this chapter was to test the hypothesis stating that SMEs have great potential to achieve sustainable development as they can provide raw materials imported or purchased from national markets. Such potential is limitedly used till now. Many SMEs in the study area do not well exploit work through industrial clusters (the idea of production lines), even if they have a desire to do that.

It was discovered that SMEs in the study area currently depend on raw materials imported from abroad or purchased from national markets. In light of the absence of cooperation and coordination among

SMEs, each enterprise must work independently to meet its needs for raw materials. This contributes to the pollution of the environment, on the one hand, by the generation of emissions of harmful gases from raw material transportation while, on the other hand, increasing the burdens of these small enterprise to bear the cost of transportation. A total of 73% of SMEs in the study area depend on raw material supplies that are either imported from abroad or purchased from national markets. The wood sector is the highest in terms of depending on imported raw materials as 71% of wood enterprises in the study area depend on imported raw materials in spite of the possibility for the provision of renewable local alternatives through wood that can be manufactured from:

- 1- Palm leaves midribs which are currently used in a limited range of manufacturing situations to create environmental products such as hutches of fruits and vegetables, native baker's tools and chairs and tables used in tourist villages.
- 2- The remains from the pruning of fruit trees which are used today as a fuel or discarded with no further use.
- 3- The trees that will be ready for harvesting (i.e., according to specific rules and standards) in 2008 from the project of wood tree farms irrigated by treated sanitary wastewater located in the study area.

This chapter provides evidence that such local resources are able to compete to a great extent with imported wood, as well as to be able to provide the current and future raw material needs of all wood industry SMEs in the study area. Meanwhile, they will provide new job opportunities within the region either within the wood industries sector or in the supporting activities and services. Another opportunity for SMEs to provide raw materials lies in their ability to recycle solid wastes for use as a secondary resource of raw materials. Furthermore, this study concluded that the adoption of a strategy to encourage the use of alternative raw materials from within the region will help to solve unemployment problems that make up 8.8% of employees in the governorate of Ismailia. It will also help provide job opportunities for weaker groups within the region (women and low-skilled employees, see photo 6.12); this, in turn, will to alleviate poverty inside the region while raising the standard of living, one of the aims of sustainable development. However, such potential, according to the researcher's viewpoint, cannot be brought to fruition in light of the absence of an integrated system of SMEs to position SMEs at the heart of the economic map of the national economy and help create some sort of cooperation and integration among such enterprises.



**Photo (6.12): Some low-skilled female employees can easily work in the field of DPLM's products**

On the other hand, it was discovered that SMEs could only achieve high levels of competitiveness, not only at the local and regional levels but also at the international level, if they adopt the strategy of work through industrial clusters and groups. Clustering of SMEs helps to overcome many production problems that they face such as poor access to information, poor access to financing and the inability to meet consumers' needs and demands.

The industrial cluster is defined as a group of enterprises that work within the same industry which are physically located within one geographical area. These enterprises produce and sell a group of related, integrated products, and the industrial cluster has one joint aim. The role of the industrial cluster is confined to producing end commodities in association with a group of enterprises (the production lines) preceded by the appropriate market studies, design of suitable products to meet market needs and selection of the best technology for producing these products. This is followed by the marketing of the end products to regional, national or international markets. This means that the industrial cluster is an integrated cluster that encompasses the production system in its entirety.

It can be said that opportunities and successes that can be achieved by the SMEs in the field of sustainable development will be greater in those cases where work occurs within industrial clusters and networks as opposed to work that takes place independently within small enterprises dispersed haphazardly throughout residential areas of the region. The advantages of clustering and cooperation will enhance the ability of SMEs to better able achieve their private aims of making a profit, remaining stable and continuing their operations. Furthermore, SMEs will be in a better position to play an important role in achieving sustainable regional development; by clustering these enterprises in one place, it will become easier to treat the negative environmental effects produced, as well as recycle solid wastes, a huge problem in those cases where SMEs are dispersed within residential areas.

The clustering of SMEs will, in particular, add to the emergence of a group of new activities relating to production and marketing such as transportation, storage, preparation and recycling of waste and the marketing of end products. In addition, this will increase the job opportunities available within the region, reduce the unemployment rate, raise the standard of living, and reduce poverty; this is the main aim sought by sustainable development. Evidence indicates that the SMEs in the study region have the desire to work within industrial clusters. However, they lack individual initiatives to form such clusters. The overwhelming majority of the SMEs in the study region are comfortable with moving their activity to adjacent, neighbouring industrial zones. Capacity exists within the industrial zones to accommodate both the current and future number of SMEs.

It is to be noted here that there are forms of incomplete cooperation among the SMEs existing in the study area. Some forms of cooperation are partial and phased-in such as in the form of resort dependence of some enterprises on others for specialized manufacturing processes in return for sums of money. Other forms of cooperation are semi-full cooperative situations in which a group of enterprises cooperate with other entities from within the group to produce end products (the idea of production lines); each enterprise works separately without shared goals with the others. Moreover, there is also cooperation between some small enterprises and other institutions to market end products. A limited degree of cooperation currently exists among some SMEs in the target area. However, a widespread, formal level of cooperation, as well as encouragement by relevant authoritative bodies, must be developed in order for SMEs in the area to reach a stage whereby working together in industrial clusters and groups is possible

It has been shown in this chapter that the enterprises that cooperate with one another or with other institutions to market their products are least likely to face structural problems within the production process; the most likely to market their end products on a daily or weekly basis; and the most stable types of enterprises. This is considered to be an excellent indicator of the fact that SMEs' that adopt the strategy of working within industrial clusters, groups or networks will increase their chance for success either at the level of the enterprise, itself, or at the level of sustainable regional development.



## **Chapter 7: Conclusion and Recommendations**

### **7.1 Introduction**

This chapter summarizes the main findings of the study in an attempt to verify the proposed hypotheses and to answer the related questions which have been based on the set of objectives designated in the introduction of this study. Accordingly, this chapter highlights the main results of the study through brief answers to the questions posed and through the verification of the proposed hypotheses. The following is a recapitulation of the questions and hypotheses posed in the introduction. Suggested answers follow in the remainder of this chapter.

#### **a- The study questions were:**

- 1- Given their present situation, are SMEs in Egypt capable of generating positive impacts on regional development? If so, what are these impacts?
- 2- What are the economic, social and environmental constraints that restrict the contribution of SMEs in sustainable regional development?
- 3- What potential exists to enhance the chances for SMEs to achieve sustainable regional development?

#### **b- The study hypotheses were:**

- 1- SMEs have, in principle, a positive effect on the economic and social development of a region; as such, SMEs can begin to activate regional and national chains of economic added value, as well as create job opportunities with good incomes on a regional scale.
- 2- The effects of SMEs on sustainable regional development are at present time limited – with respect to particular branches (i.e., industry types) and size, according to the following aspects:
  - a- SMEs can offer only a limited long-term development perspective due to their small capital resources, inconsistent supply and demand structures and high market risks.
  - b- SMEs basically provide jobs for low-qualified employees with low standards regarding suitable levels of social security insurance for workers and employment protection (i.e., safety on the job).
  - c- Production in SMEs is associated with high environmental risks due to the lack of environmental awareness present, the cost and know-how associated with environmentally-friendly production methods, as well as the absence of actual control mechanisms.
- 3- SMEs have a high potential to foster sustainable development within regions based upon the following aspects:
  - a- In many instances, SMEs have the opportunity to process local raw materials for use in local manufacturing production rather than importing already-processed materials from regional or national markets; however, SMEs are not utilizing such possibilities and potential adequately.
  - b- Many SMEs in the region have the potential to adopt regional cluster building and network strategies to improve their degree of efficiency; however, these entities do not currently utilize these strategies to the greatest extent possible.

## 7.2 General Research Findings

**7.2.1 Regarding the first question and its related hypothesis (i.e., hypothesis no. 1):** "Given their present situation, are SMEs in Egypt capable of generating positive impacts on regional development? If so, what are these impacts?"

Three main issues relevant to the roles SMEs play to promote effective socio-economic development within a region have been discussed, namely:

- 1- The ability of SMEs to drive the chain of economic added value at the national and regional levels;
- 2- The capability of SMEs to provide job opportunities within the region; and
- 3- The leverage of SMEs to generate a good economic return for enterprises while generating a good income for employees while taking into account the subsequent effect of these income levels on the employees' social and economic status including housing conditions.

It is clearly evident from the research findings related to the first issue that the SMEs in the study area possess the potential to enhance their capability of realizing added value at the enterprise level, itself; approximately, 85% of these SMEs succeeded in achieving actual added value at this level.

SMEs still have a limited effect relative to the amount of leverage they possess in order to drive the chain of economic added value within the region and to create job opportunities within different domains related to their particular production activities. This can be substantiated by the fact that the vast majority of SMEs perform and bear all roles involved in a normal production process from raw material handling to marketing and distribution. Consequently, this obstructs the roles of other entities with specialized enterprises expertise that could have performed these tasks more efficiently.

The modest contribution of SMEs to energizing the chain of activities and added value within the target region manifests itself through a variety of limited mechanisms. First, SMEs cooperate with other institutions in the marketing of final products. Second, employees tend to be hired from within the region; on average the percentage of workers coming from outside of the region to work is approximately 14% of the total study area labourers. Generally speaking, this group of employees tends to use public transportation, thereby contributing to and activating yet another aspect of positive regional development.

A large ratio of study area enterprises rely upon the importation of raw materials from the national and international markets. As a result, the diversity of transportation facilities used to bring forth raw materials together with the marketing of the final product at national and regional levels would ultimately enhance the capability of SMEs in the study area to drive regional economic development. In spite of the fact that this runs counter to the notion that sustainable regional development encourages the use of local raw materials, this activity would greatly enhance the role of SMEs in accelerating the regional economic momentum.

Accordingly, the research highlights the fact that the limited contribution of SMEs along with all the obstructions to enhancing their role in contributing to the chain of added value within the region is due to the lack of coordination and the presence of "individualism." SMEs in the study area do not have an adequate awareness of the value of establishing cooperation between enterprises within production functions in order to complement one another's activities. Consequently, by doing so this forces these

enterprises to take on all roles within the production cycle in order to maintain their existence and enhance their ability to compete with other similar enterprises.

It is evident that small enterprises are capable of playing a significant role in providing suitable job opportunities by hiring employees and providing jobs at both the national, as well as regional, levels. This can be precisely indicated by the fact that in Egypt in 2002 the contribution of SMEs, relative to job creation at both the enterprise and employees levels, reached 97.7% and 64.13%, respectively. Furthermore, the rate of growth of SMEs in Egypt- particularly in the Ismailia governorate - for enterprises, as well as employees, - tremendously exceeds the growth rate of other larger-scale industries. This growth is directly linked to national economic reforms of the last two decades that have supported and encouraged the expansion of small-scale industries.

The new goals of increased privatization and the promotion of individual and private initiatives, in response to a fledging economy, were designed to offset the problems of decline in employment and job opportunities brought on by the socio-political crisis of the time. SMEs were seen as temporary solutions to offset these socio-economic problems. As a result, SMEs have witnessed a remarkable increase in the total number of institutions and employees. However, in spite of these increases, the role of SMEs within the Egyptian national economy remains relatively unchanged when, in fact, it could prove to be strategic. SMEs have no clear development policies from which to formulate their roles at the national level. This emphasizes the lack of acknowledgement of the vital role SMEs play in accelerating economic growth and development on the part of the Egyptian government.

One of the most important results discovered in this research, relevant to SMEs on either a national or regional level, is that SMEs have more capability to absorb employees and create new job opportunities than larger industries. However, these enterprises do lack the strength to persist; not only do these concerns exceed larger industries in the rate of initiation and setup, but they also exceed larger enterprises in the rate of enterprises deceleration and failure. This can only be justified by the absence of an overall national management plan presented by governmental or non-governmental institutions. The main role of these institutions should be to formulate precise plans and policies that would incorporate the activities of small-scale industries into the national economic development plans. In addition, the absence of a regional strategic plan for SMEs would ultimately lead to other unexpected negative impacts in the future at the enterprise level, as well as the regional level.

SMEs in the study area have a substantial ability to provide suitable incomes for a large percentage of the enterprises, themselves, as well as for their respective employees. A total of 85% of SMEs in the study area have achieved a positive added value that annually exceeded 10% of the capital invested. In spite of this fact, more than 46% of the employees of SMEs generally live below the poverty line (by the U.S. \$3 per day standard). About 21% of this previous percentage (i.e., 21% of 46%) is considered to be classified as unessential employees (third-class employees). However, according to the Egyptian standard for the lower poverty limit (i.e., in U.S. dollars, \$2 per day), that is used to estimate the number of people unable to afford the cost of essential food and other basic needs such as education, only 6.5% of the essential employees (first- and second-class employees) in the study area will fall below the poverty line. This is considered to be a very good percentage by comparison to that of the entire country whereby 20% of people live below the poverty line. Moreover, it has been indicated that there is an inverse relationship between the employees' wages and the problems SMEs face. In addition, it was found that a direct relationship exists between social insurance for the labourers and the added value for the enterprise. Enterprises that provide social insurance for 56% or more of their

labourers, have achieved an added value higher than those enterprises that provide social insurance for less than 56% of their employees.

Research has proven that the impact of the SMEs in the study area on the labourers' life style is positive as employees enjoy very satisfactory levels of secure, stable social and economic standards. This can be illustrated by comparing the percentages of children lacking education, illiteracy rates, levels of education (i.e., those having received education at the intermediate level) and marriage rates. In each instance, figures for employees within SMEs were compared to those of the Ismailia region and the nation, overall. The percentage of children lacking education within the households of SMEs' employees was smaller by comparison to the percentages for the nation or the Ismailia region, as was the illiteracy rates. Furthermore, there is an increase in the number of employees and their family members with an intermediate education, as well as a rise in the number of married employees in the study sample compared with those figures of the Ismailia Governorate or in Egypt, as a whole.

By Egyptian standards marriage status is a good indicator for social and economic life stability. The high percentage of married SMEs' employees in the study area emphasizes the fact that the incomes provided by the SMEs are sufficiently adequate for establishing a secure family future. The vast majority of the immigrants in the study sample were seeking good job opportunities; this ultimately emphasizes the fact that SMEs in the study area have stimulated forces by which to attract employees from a broad geographic area. In broad terms, SMEs have proven their vital role in creating suitable job opportunities in the region. Furthermore, these overall social indicators illustrate the capability of SMEs to provide suitable incomes to secure a satisfactory standard of living that can provide for education expenses for all members of a family. Therefore, older children are no longer expected to leave school in order to work and help support the family.

The wages SMEs are able to pay their employees have enabled about 68% of the employees to own their own residential dwelling units. Certainly, this is a relatively high percentage when compared with the overall average percentages in Egypt or Ismailia which do not exceed 50% in either case. Furthermore, this study also indicated that a high percentage of employees' housing units within the study area are connected to primary services including water supply, electricity, drainage and sewage systems, as well as telephone networks. In addition, only a small percentage of the labourers in the sample group, not more than 13%, live in very poor conditions; the majority of employees from within SMEs live in better conditions relative to building conditions and utility connections. This further verifies the main concept of sustainable development that aims to provide adequate shelter for all.

In summary, it is clearly evident that SMEs in the study area have succeeded in providing a satisfactory standard of living along with suitable incomes for the majority of their employees. This is clearly demonstrated in their housing, social and economic life patterns as compared to the average situation at the national and regional levels in Egypt. Nevertheless, there are many obstacles hindering the survival of small industries in the region, not the least of which is the lack of oversight and direction from a national scale. Either an official or non-official organization needs to be formed to begin to provide policies and coordination between existing enterprises and programs, as well as to emphasize the role SMEs play in the acceleration of economic development. Furthermore, this entity needs to be responsible for the formulation of regional plans for these industries that, in turn, can be integrated into the nation's economic plans for growth and development. This will lead to increased integration and coordination between all of these enterprises; an increased standard of added value; improved levels of social insurance provided to employees ; as well as increased capabilities for

competition between these small-scale industries with larger-scale enterprises in regional and national markets.

**7.2.2 Regarding the second question and its related hypothesis (i.e., hypothesis no. 2):** “What are the economic, social and environmental constraints that restrict the contribution of SMEs within the context of sustainable regional development?”

Potential economic, social and environmental constraints that could limit the contribution of small enterprises to the enhancement of sustainable regional development have previously been discussed and can be briefly summarized as follows:

Relative to economic constraints, the research indicated that a combination of limited capital investment by SMEs, inconsistent structures of supply and demand, and high market risks can prevent these small industries from playing a significant role in the enhancement of sustainable regional development in the long-run. As it has been clearly demonstrated from the empirical analysis presented in Chapter 5, the minimal amounts of investment dedicated to SMEs' for capital, in particular working capital, will threaten the ability of these small enterprises to continue, and even more so, to survive in the long-run. This would consequently lead to the loss of many job opportunities both directly and indirectly. Such a failure would certainly influence the chain of economic activities within the region in a negative way.

The empirical results also showed that approximately 29% of those enterprises from the study area can only finance production costs for a time period of less than one month; whereas nearly 52% of the SMEs in the study area can cover production costs for a time period of one month and a half, and only about 20% of these small-scale concerns in the area can finance production costs for a longer period of time. Experts and specialized scientists agree that successful enterprises in Egypt can be characterized as being able to support production costs nearly exceeding a three month period. From this it is evident that vast majority of SMEs in the study area would be categorized as economically unstable.

By analyzing the relationship between an enterprise's working capital and the variables of economic stability, specifically including added value and problems encountered by the enterprise, it became obvious that the greater the amount of available working capital (capital available to cover costs of operation, production and employees for the longest time period possible), the greater the capability of the enterprise to stabilize and to endure market risks. This translates to a greater ability on the part of the enterprise to support the survival of many job opportunities in the region and to subsequently enhance and strengthen the role such an enterprise plays in sustainable regional development.

Entities with large amounts of working capital managed to realize a greater added value than those enterprises with medium or small amounts of working capital. Moreover, when examining the relationship between the amount of working capital available relative to the level of problems experienced by a small enterprise, a much greater percentage of those entities with large amounts of available working capital experienced relatively fewer problems than compared to those entities with medium and small amounts of available working capital. Furthermore, "large-capital" SMEs are generally more capable of marketing and distributing their products periodically, that is daily or weekly. This can be attributed to the fact that the large-capital enterprises possess their own means of transportation and are better able to control transportation costs thereby resulting in cost savings and product price reduction. Since medium and small capital enterprises are not in a financial position to possess such means of transportation, they are unable to exert such control over transportation costs

and product prices must reflect these higher costs. Consequently, these smaller entities are less able to penetrate the market. Furthermore, it was evident that all the enterprises that cooperate with specialized marketing institutions suffer fewer problems and are considered to be among the highest category in realizing added value whereas self-dependent enterprises suffer a larger number of problems, greater marketing risks and the realization of low levels of added value

The research has also concluded that most of the small investors in the study area have insufficient knowledge regarding market forces and requirements. Consequently, these concerns are compelled to copy past and current successful enterprises patterns in an attempt to achieve the same or similar levels of success. As a result, the supply of goods and services in the marketplace will increase relative to the demand that is present; the market then becomes oversaturated. This imbalance in the marketplace can then lead to difficulties in the marketing of products. This ultimately creates negative impacts on the future of SMEs, especially those with limited capital enterprises, as they depend primarily on the local market for survival. The nature of large-capital enterprises and their ability to market their products at both the regional and national levels is such that these particular concerns are better able to resist the critical point where an enterprise is forced to discontinue conducting enterprises; therefore, the length of survival of larger enterprises is generally greater than that of SMEs with limited capital.

Based on field studies and interviews with a variety of experts and specialists, it was found that all the enterprises that failed went through several stages prior to failure. The following information recapitulates the characteristics of each stage. The first stage is the repetition by the enterprises of successful enterprise models and is attributed to the fact that the small investor is unable to understand or comprehend the market dynamics and related primary requirements. Action is limited to imitation of previous success stories in an attempt to achieve the same success met by his predecessors. This results in product availability that runs counter to market requirements (i.e., demands), and hence the difficulty of marketing these products and the chain of losses begins. As a result, production slows and gradually stops forcing the enterprises into the second stage, namely the stage of production according to the previous order from / placed by the customer. This type of production pattern sets the wheels in motion for the enterprise to lose high-wage, skilled employees that, in turn, join other sustainable, productive enterprises. Unskilled employees then fill the positions formerly filled by skilled employees which result in time delays within the production system of the enterprise. Production suffers, and either lower-quality products are produced or increased amounts of time are needed to produce and sustain the higher-quality production standard. This, consequently, moves the enterprise into the third stage, the customer's loss of confidence in the product/enterprise. This stage can be characterized by the elongation of temporary unemployment periods that finally becomes permanent unemployment in the worst case scenario. The enterprise then enters the fourth stage, that of closure and bankruptcy.

The research has suggested an ideal model for securing sustainability of SMEs and realizing a great success in economic development, in general. This model should begin with a thorough study and precise analysis of the market dynamics in an attempt to identify the latest and most recent market demands and requirements. Next, product design would incorporate these market demands via appropriate and adequate specifications using the least expensive means possible for as long as possible. Next, the appropriate production technology would be selected in accordance with commodity production requirements; employee training relevant to the technology used and production processes is necessary at this step to help sustain the required production quality. The result will be the production of a high-quality product that meets the market requirements with the least

amount of cost possible. This would, thus, facilitate product marketing. The cycle repeats as the market dynamics are analyzed once again to identify the latest demands imposed by new developments and innovation.

This research highlights the fact that success and sustainability of SMEs can generally be achieved through the realization of this model. Any defects or disorder in this production cycle will subsequently lead to a breakdown of the entire production system which, in turn, generates a host of structural problems. Consequently, the enterprise will experience difficulty relative to survival. However, this model would be very difficult to apply to SMEs due to the high "individual" labour costs these entities must bear during each stage of the production cycle. Each stage, incorporated into the production system, necessitates the presence of an entire team to achieve successful results.

This study has revealed that there are many social variables and constraints that affect the production system of the small industries thereby limiting their contribution to sustainable regional development. Overall, SMEs offer job opportunities for somewhat rather low-skilled/semi-skilled employees. Typically, these entities do not provide suitable social insurance for their employees; nor do they ensure sufficient industrial safety measures are present during production. In the long-run, the continuation of such practices will threaten the future of these industries and resulting sustainable regional development.

It has been indicated that there is actually a small percentage of the labourers, approximately 30.7%, in these enterprises who have attained technical or higher education levels while the vast majority of the enterprises' labourers have attained lower levels of education. A percentage of not less than 41% of the labourers in these small enterprises gained their experience by "inheritance," meaning that the previous generation transferred its technical skills and abilities to the up-and-coming generation. A total of 51% of the employees in the study area gained their experience through working in enterprises or previous employment with similar enterprises. The percentage of employees gaining experience from technical education did not exceed 2%, while 6% of employees surveyed have no prior experience. This emphasizes the fact that a high percentage of labourers in small enterprises are not professionally qualified. It has also been shown that the lack of awareness of the vital importance of providing safe industrial security measures can have a serious impact on the production levels within these industries in the long-run. When the effects of the previously mentioned social variables are taken into account, it has been clearly indicated that enterprises that provide more than 55% of industrial security measures for their labourers, as well as the enterprises that offer insurance for more than 64% of their labourers, are considered to be the most successful enterprises both in general terms and in terms of the highest levels of added value attained. Similarly those enterprises whose owners acquired their past industrial experience from training centres, enterprise trainings, participation in similar enterprises, or mainly from technical education, were the most successful entities in realizing a high added value compared to those which relied mainly on "inherited" skills and experience from the older generations.

Accordingly, the research emphasizes the fact that labourers are considered human capital and, as such, one of the basic resources in this enterprise sector whose importance is just as great, if not more so, as the fixed or working capital. An enterprise must make the best use of the funds available for investment, as well as the available human resources in order to obtain maximum benefits. This means investing in human capital through the provision of suitable social insurance and relevant industrial security measures. In addition, and in order to guarantee high production quality, the labourers must be

specially trained by industry-specific training centres. This would ultimately enhance the capabilities of SMEs for innovation and facilitate their ability to respond to new market demands and requirements. However, given the cost of human resource investment, small industries cannot be expected to bear these costs in their entirety as an individual responsibility. Instead, cooperation needs to occur between all SMEs, each within its own field of specialization and expertise, and the appropriate governmental authorities; this is the key element needed to better emphasize the role of these small industries in the socio-economic developmental process throughout the country.

This study's findings indicate that the production processes incorporated within SMEs have serious environmental impacts that impede and hinder the contribution of small industries toward sustainable regional development concerning the third issue, that of environmental constraints. This is attributed to the lack of environmental awareness, know-how and knowledge, as evidenced by the overuse of available raw materials; energy uses without regard to the potential needs of future generations and therefore, energy regeneration; as well as the absence of production control mechanisms. Accordingly, it was discovered that the old belief that small industries are considered environmentally-friendly and non-polluting has been altered. In fact, some small industries in the study area have become a permanent threat to the environment. However, due to the absence of environmental awareness, many entrepreneurs do not realize that they cause harm to the environment as they believe (i.e., from their point of view) that the amounts of solid or liquid waste materials their entities generate are considered relatively small. However, the combination of the dispersion of SMEs within the residential areas in the study area with the large number of SMEs present maximizes the negative environmental impacts these entities generate.

The absence of environmental awareness is evidently indicated by the dependence of the vast majority of these small-sized enterprises on nationally-marketed or overseas-imported raw materials. The percentage of SMEs in the study area that depend on local natural and renewable raw materials did not exceed 10% in spite of the fact that needed raw materials are readily available locally. More than 70% of SMEs within the target area in the wood industry sector import raw materials for product manufacturing. Consequently, the emission of contaminated gases from the frequent levels of transportation needed for the importation of raw materials causes pollution within the environment. The supply of such raw materials requires a united effort from the SMEs together with assistance from a governmental or non-governmental organization to oversee the production systems of small industries beginning with the provision of raw materials through the final stages of product marketing.

By measuring the environmental impacts of the production process incorporated within these small industries, it was found that the polluting gases and noxious air particulate levels present surpass the permissible safety limits both within the enterprise zone and externally in the surrounding area. It was also found that several enterprises contribute to the contamination of running water by disposing of liquid wastes directly into sewage water systems without first treating this waste as required. In addition, the production processes of these small industries generate noise pollution both within the enterprises and within the surrounding areas. The impacts of this noise pollution is generally bad on the labourers' health and may also lead to injuries during work as employees are unable to hear alarms or warnings as a result of high noise levels. Furthermore, the surrounding residential areas also suffer from related annoyances and distress from the noise pollution generated.

A large volume of solid residual waste produced daily by these industries is discarded even though these wastes could be recycled and reused as raw materials in other production process. Furthermore,



the increase in the quantity of solid-waste materials used in some enterprises is due to lack of periodical and regular maintenance of machines that should have been done on a regular basis by specialists and technicians. This is yet another aspect within the enterprises that indicated the degree of lack of environmental awareness present. It should be also noted here that less than 36% of the enterprises in the study area practiced rational energy conservation measures relative to their production volumes.

Consequently, given the findings of this research, it is recommended that pollution-generating enterprises should be physically located together within a separate industrial zone specifically allocated for such use in order to minimize the possible environmental impacts. This would ultimately facilitate the collection of solid waste materials for recycling and would facilitate the treatment of industrial waste water prior to its disposal within the public sewers. By locating SMEs in close proximity to one another, steps can be taken to begin to foster collective actions by SMEs that would help to minimize the volume of gas emissions produced resulting from raw material importation so that air quality standards would be within acceptable standards, as well as to reduce attenuating noise levels from which neighbouring residential inhabitants suffer.

**7.2.3 Regarding the third question and its related hypothesis (i.e., hypothesis no. 3):** "What potential exists to enhance the chance for SMEs to actually achieve sustainable regional development?" The research found that opportunities for SMEs to achieve sustainable regional development exist within two primary branches. These can be described as follows:

**The first opportunity is** related to the ability of SMEs to develop and maximize their access to and processing of local raw materials; this is an opportunity that has been tapped on a limited scale to date. At present, the vast majority of SMEs in the study area depend upon raw materials that are either imported from abroad, as in the wood sector, or from national markets; this importation process only serves to exacerbate the already existing negative environmental impacts from transportation. The research reveals that the dependence of SMEs on alternate local raw materials will minimize the resulting environmental impacts from the transportation of these raw materials while reducing overall transportation costs. Therefore, the cost of production would conceivably be reduced, allowing the enterprises to pass on this reduction to the consumer in the form of reduced prices. Furthermore, the final product would then have the added advantage of being more competitive in the marketplace. In addition, the action of facilitating access to local raw materials instead of maintaining continued reliance on imported raw materials from abroad or elsewhere within Egypt will foster the creation of new job opportunities, in the areas of raw material processing and finishing, that did not previously exist within the region.

According to research findings, these facts, when taken altogether, constitute the broad basis for achieving sustainable development. However, generally speaking, neither SMEs nor the local decision-makers influencing SMEs, have considered the use of these available local raw materials in their production processes thus far. Yet, it is evident that reliance by SMEs on local raw materials for their production requirements would be of vital importance to enhancing the role the SMEs sector can play in regional development. This research has illustrated, using this point of view as a basis, an analysis of the potential for use of local raw materials within the woodcraft sector since this particular sector is the most dependent on imported raw materials. (More than 70% of enterprises in this sector depend on raw materials imported from abroad.)

Many local, renewable alternatives to produce wood in the study area were identified. These include timber obtained from palm trees, residue from fruit trees (i.e., fruit farms) resulting from pruning, and tree farms (i.e., grown for wood product production) irrigated with treated sanitary wastewater. Use of these local timber resources has proven to be competitive for SMEs, to a large extent, with that of imported timber. Furthermore, the supply of local timber resources is ample enough to be capable of providing current and future raw timber needed by the SMEs that work in the wood industries in the study area.. By relying on the local area to supply needed natural resources, SMEs will help to create new job opportunities within the region that did not exist before. These jobs would include new jobs within the wood industry sector and jobs that result from related service activities within the region.

If the SMEs in the study area depend solely on local, rather than imported raw materials, then the total number of enterprises that can be created in the field of wood industry will reach 2,324. The Ismailia Governorate has 20,000 unemployed persons; this represents about 8.8% of the respective labour-force. The opportunity is then available for SMEs to draw from this pool of unemployed persons and by so doing reduce a substantial portion of the unemployment at the both the regional and national levels. The wood sector alone is able to provide approximately 23,000 future job opportunities on a regional scale. This will help to solve the unemployment problem at the regional level which is considered to be one of the most important goals of sustainable regional development.

It should be noted that all small industry sectors in the study area possess great potential to recycle and reuse industrial residues and solid wastes resulting from industrial processes. These materials should be considered as a secondary resource of raw materials rather than being seen as unusable and discarded as waste only to contaminate the soil and the environment. For example, sawdust and scrap wood/rests (i.e., small wood processing by-products) can be used once again in the manufacturing of compressed wood boards or particle board. It is also possible to collect metallic wastes and melt them to reproduce metallic raw materials. Wastes from agricultural and nutritional manufacturing can be used as animal fodder or in the manufacturing of soil fertilizers and manure. Solid textile wastes can be used in manufacturing carpets and rugs, and waste water from textile dyeing processes can be utilized once again in subsequent dyeing processes.

These types of actions and measures will undoubtedly help to protect the environment, on one hand, while achieving economic benefits, on the other hand. In addition, the research concluded that by supporting the strategy of using alternative raw materials within the region, this action will help to solve the unemployment problem and provide job opportunities for weaker groups within the region (i.e., women and unskilled labourers). Subsequently, poverty will be reduced within the region and the standard of living will rise; thereby, the aim of sustainable development will be achieved. However, this potential cannot be effective- from the research's point of view – in the absence of the presence of an integrated system of SMEs to enhance the position, recognition, and existence of SMEs within the economic core of Egypt's national economy. At the same time, a system such as this would further serve to create and establish a type of cooperation and integration among SMEs.

**The second potential** is represented by a call to SMEs in the study area to work through clustering and industrial networks. The formation of an agglomeration will enable SMEs to overcome several production problems that confront them, such as accessing information, meeting financial needs, as well as meeting the market needs of their consumers. Clustering of SMEs is not only concerned with the production of a final product through cooperative networks among a variety of enterprises (production lines); but, rather, there are many other procedures that must be taken into account, as well. These include market analysis, feasibility studies, proper product design relative to market

demand, applicable manufacturing technology, and marketing of the final product (whether it will be locally, nationally or internally marketed).

The research concludes that SMEs can have and obtain realizable opportunities and success in the domain of regional sustainable development by the use of collective efforts through clustering and industrial networks rather than single-handedly attempting to bring sustainable regional development to fruition. The advantages of cooperation and clustering will enable SMEs to become more capable of achieving their specific targets with respect to profit, sustainability and stability while increasing their ability to play an important role in the domain of regional sustainable development.

The physical allocation of these enterprises in one geographical area will help to facilitate the reduction of negative environmental impacts while facilitating opportunities for joint recycling of solid wastes; the minimization of time needed for dealing with wastes; and the reduction of transport distances and costs for the various products and wastes throughout the stages of processing and production. Overall, this will help to create a chain of associated activities at all levels - production, final product and marketing levels. There will be a need for such enterprises as transportation, storage, waste recycling, raw material preparation, as well as marketing, enterprises; none, of which, exists under the current individual enterprise system in the study area. These operations would have been confronted by extreme difficulty given the current situation of dispersion of SMEs throughout populated urban areas in the region. This recommended action will ultimately lead to an increase in available job opportunities within the region and a decrease of unemployment, thereby, raising the standard of living and reducing poverty. It is these results that are considered the main objective of sustainable development.

This research has also documented some relevant indicators pertaining to the stability of SMEs. One of these indicators is that enterprises cooperating with one another, or with other institutions in the marketing of their products, are the least likely to be exposed to structural problems in production processes and the most likely to be involved in marketing final products on a regular basis (i.e., daily or weekly). Therefore, these SMEs are also the most economically stable enterprises in the study area. This is considered proof that the reliance by SMEs in the study area on strategies that support the creation of agglomerations, networks or industrial clusters will increase opportunities of success for these enterprises and enhance their role in regional sustainable development.

Moreover, it has also been revealed that there is the possibility to physically allocate present and future enterprises in the study area within the industrial zones. It should be noted here that the maximum number of labourers per feddan in industrial areas should be 40 or fewer labourers/feddan, a standard that will be adequate for establishing an integrated zone of SMEs. This zone would include an entire road network, primary services and green areas that play a major role in the reduction of pollution resulting from production processes. In addition, this zone would also include areas designated specifically for recycling wastes, liquid waste treatment, and raw material storage. Furthermore, designation of particular areas would be allocated according to type and specifications of each industry.

### 7.3 Proposed recommendations

A set of suggestions and recommendations, based upon the general results of the research highlighted in the previous sections, has been illustrated in an effort to enhance the effectiveness of the roles SMEs can play, in achieving sustainable development at both the enterprise and national levels. These recommendations are as follows:

- 1- The importance of having only one organization (i.e., an umbrella organization) available to represent all authorities and institutions related to SMEs should not be overlooked or underestimated. Therefore, all of the official organizations and authorities related to SMEs should be consolidated into one organization that is competent in fostering the development of these smaller enterprises on a broad-scale with respect to supervision, planning, coordination, promotion and dissemination of products. This entity should also assist these enterprises technically and financially to meet their needs related to the production cycle. In the end, this will help to save time and effort, as well as improve the efficiency of these enterprises relative to their role in bringing about sustainable regional development.
- 2- The accuracy of information and related databases of any economic or service sector is considered to be one of the most important pillars of the development of a sector, and therefore, one of the main tools to define problems and constraints a particular sector faces. Unfortunately, SMEs, as a sector within Egypt's economic structure, suffer from serious problems relative to information and data bases as there is no accurate, comprehensive information or database pertaining to the overall volume and types of industries included within a particular sector. This is primarily due to the fact that small investors abstain from officially registering their enterprises in order to avoid the high associated costs and, consequently, the rules and regulations imposed as a result of registration; hence, available information is insufficient. Therefore, this study recommends that a statistical file pertaining to information about SMEs in Egypt be developed and maintained; this file should include accurate and specific databases and information related to these enterprises. Also, it is very important to encourage the small investors to officially register their enterprises and to minimize difficulties and constraints that complicate the registration process.
- 3- The decision-makers in Egypt should regard SMEs as an effective solution to economic problems in the country rather than as an outlet for crisis engendered economic reforms and restructuring that led to increases in the number of unemployed. From this point of view, it is necessary to develop a precise, detailed plan that envisions the participation and contribution of small industries in the Egyptian national economy. This plan should be based on the market analysis of demand and associated gaps in available supply relative to product demand gaps within the context of that portion of the market share that SMEs can capture. Then, the phenomenon of repetitive models of enterprises that compete strongly among themselves, regardless of actual demand, will vanish. Instead, an integration of these enterprises, of sorts, will be established in order to achieve an improved level of added value and related quality of production. This would ultimately enhance the chance for SMEs to compete in light of globalization with larger-scale enterprises in the open-market.

- 4- A variety of programs should be developed for protecting SMEs from bankruptcy and the danger of failure, as well as from subsequent closure and job losses that would otherwise perpetuate negative affects in the context of regional sustainable development. These programs would help to directly insure the capability of enterprises to avoid the threat of closure while indirectly avoiding the subsequent loss of numerous job opportunities within the region thus keeping regional development sustainable.
- 5- Incubators should be developed to assist small entrepreneurs and investors to develop their capacity to understand market dynamics, analyze new variables as dictated by market growth, to respond to changes and expansions, and to gain experience in ways in which to adjust to and cope with these variables. Furthermore, these incubators should enable and encourage SMEs to become environmentally active for as little cost as possible by assisting them with the implementation of mechanisms of environmental preservation and the reduction of harmful environmental impacts that result from industrial operations.
- 6- It should be recognized that the employees in SMEs are valuable human capital in which enterprises would do well to invest in heavily. Therefore, the owners of SMEs should be encouraged to provide their employees with the necessary means of protection while working and to provide suitable levels of social insurance for them, as well. The maximization of human capital in SMEs can be realized by raising the skill efficiency levels of labourers' with respect to specific industries. Such action would ensure high quality production while enhancing the capability of SMEs to work innovatively thereby increasing their capacity to respond positively to new market demands and requirements. This research suggests that the investment into human capital should not be an individual responsibility for each enterprise, but rather, it should be a collective responsibility between small industries, each within its specialized field, and those governmental authorities whose main responsibility is to preserve the rights of employees.
- 7- Support for SMEs should not be restricted only to financial subsidy but should also include the provision of technical and environmental assistance for these enterprises in conjunction with aid to encourage the adoption of new technologies. This aid should be coupled with the help of experts and specialists from the governmental environmental affairs organization. Technical support should also include energy consumption savings programs, incentives to utilize renewable energy sources and the re-use of wastes, and the replacement of the use of conventional sources of energy by natural gas as an initial step.
- 8- The need exists to raise the degree of environmental awareness for organizations, syndicates, unions and societies associated with SMEs, as well as for enterprise owners and labourers within their respective domains. This can be achieved primarily through the development and implementation of organizing seminars, meetings and enterprises designed to foster the notion of an "ecological sense" into daily behaviour practiced by the members incorporated within the society of SMEs.
- 9- SMEs should be encouraged to utilize renewable local raw materials, as well as those obtained from recycling processes, as local inhabitants are aware of existing raw materials but, unfortunately, utilize them on a small scale. Therefore, it is strongly recommended that this type of utilization be developed and expanded in order to facilitate a renewable source of raw materials. Furthermore, the recycling of wastes from industry should be used to produce secondary raw

materials that can be re-used, thus, ultimately, creating many job opportunities within the region especially for weaker population sub-groups (women – unskilled labourers) and thereby, reducing negative environmental impacts such as emissions from the frequent transportation of raw materials from faraway distances (national or international markets). The collective result then becomes one of an increased standard of living with diminished amounts of poverty within the region, the main objective of regional sustainable development.

- 10- Individual initiatives promoting industrial agglomeration and clustering should be encouraged through the education of small investors relative to the advantages to be gained through collaboration and integration within industrial zones and relative to particular industry sectors. Moreover, governmental authorities providing assistance to SMEs should help build up such clusters by providing incentives and “breaks” from current requirements for those SMEs located within appropriate zones. This will subsequently enable small industries to compete more intensively in new markets, as well as to create many job opportunities associated with these clusters. This, in turn, will lead to improved sustainability for small scale enterprises and help to reduce unemployment and poverty within the region. Thus, the ultimate objective of sustainable regional development will be achieved.
- 11- The necessity for the planning of relocation of SMEs with high emissions from residential areas to zones located outside of these residential areas should be encouraged. This requires facilitating land sale procedures in industrial zones by accepting small sums of money in advance (i.e., a down payment) and then allowing for repayments in instalments over time for the remaining balance due (i.e., a mortgage). This will encourage enterprise owners to purchase land that already has infrastructure and service utilities available to the site. However, it is important to plan the locations of such sectors in such a manner as to maximize the ability to treat wastes. Therefore, it is recommended that agglomerations of similar sectors be developed in which resulting wastes can be treated simultaneously in an effort for each collective group to reduce waste treatment costs.
- 12- There should also be on-going, continuous coordination and linkages between specific industrial clusters and related specialized scientific centres to further develop and ameliorate/revolutionize industrial processes (i.e., in the areas of technology, final products, energy, market analyses, etc.). This will minimize possible negative impacts (i.e., pollution, noise, wastes, etc.) while, at the same time, provide a means for dealing with the changes of demand for products or product-types in the global and open markets. National banks should also grant soft loans to these enterprises to facilitate the allocation of SMEs within industrial zones, as well as to enable the use of safer, more suitable, modern technological means to ensure competitive production for SMEs. Furthermore, these enterprises should receive enhanced assistance in the form of customs and tax exemptions during their “start-up” phase, as well as assistance with product marketing.

## BIBLIOGRAPHY

- Abdel-Wahaab, R., *Small and Medium Enterprises (SMEs) in Egypt: Environmental Profile*, Environmental Management & Technology Fund (EM&T) and Egypt Environmental Initiatives Fund (EEIF), Cairo 2000.
- Allam, S., *Management of Small Manufacturing Enterprises*, Department of Businesses Management, Faculty of Commerce, Cairo University, Giza, Egypt, 1993, (in Arabic).
- Alsaead Abed Al-Monem, *Sustainable Development: the Concept and Application*, Ph.D., Faculty of Engineering, Cairo University, Giza, Egypt, 1999.
- Arabian Work Organization, *Small Scale Industries and Traditional Artefacts in Arabian Countries as a Development Tool*, Office of Arabian Work, Conference of Arabian work, Session of 21st, Cairo, 4 - 11 April 1994, (in Arabic).
- Ashford, N.A., and Meima, R., *Designing the Sustainable Enterprise*, Summary Report, Second International Research Conference, The Greening of Industry Network, Cambridge, Massachusetts, USA, November 1993, ERP Environment, Shipley 1993, observation of Arun Kumar, p.22.
- Bolton Report, *Report of the Committee of Inquiry on Small Firms*, London, 1971. Available under: <http://www.lamp.ac.uk/mit/pdf/report1.pdf>
- Burns, P., and Dewhurst, J., *Small Business and Entrepreneurship*, Second Edition, Houndmills, Basingstoke: Macmillan Small Business Series, Macmillan Press Ltd., New York, 1996.
- CAPMAS (Central Agency for Public Mobilization and Statistics), *Annual Statistical Year Book*, 2002, (in Arabic).
- CAPMAS (Centre Agency for Public Mobilization and Statistics), *Census of Population, Housing and Establishments 1996*, Complete Coverage (Population Characteristics), Total Republic, Second Volume, Final Results, Cairo, 2000, (in Arabic).
- Ceglie, G., and Dini, M., *SMEs Cluster and Network Development in Developing Countries: the Experience of UNIDO*, International Conference on Building a Modern and Effective Development Service Industry for Small Enterprises, International Labour Organization (ILO), The Committee of Donor Agencies for Small Enterprise Development, Rio de Janeiro, 2-5 March 1999.
- Chowdhury, Shyamal K., and Wolf, S., *Use of ICTs and the Economic Performance of SMEs in East Africa*, UNU/WIDER, 2003.
- Costanza, R. and Wainger, L., Ecological Economics. In: *Mending the Earth: a World for Our Grandchildren*. P. Rothkrug and R. L. Olsen (eds.). Berkeley, North Atlantic Books, 1991.
- De Vries, K., *The dynamics of family controlled firms*, Faculty of Business & Management, University of Ulster, Northern Ireland, 1993.

- EFILWC (European Foundation for the Improvement of Living and Working Conditions), *Innovative and Sustainable Cities*, Dublin, 1997.
- Eigen, J., *Coalition for Sustainable Urbanization*, the First Session of the World Urban, UN-Habitat, Nairobi 29 April – 3 May, 2002.
- El- Kholei Ahmed, *Sustainable Development Strategies in Egypt: Experiences and Lessons Learnt*, Submitted to: The Regional Consultative Meeting on Sustainable Development, Abidjan, Côte D'Ivoire, September 1999.
- Elleithy, A., *Small Manufacturing Formation and Regional Development in Egypt*, Ph.D., Department of Planning and Landscape, Faculty of Arts, University of Manchester, 1994.
- El-Mously H., *Small Scale Industries and their Role in Self Development for Local Societies*, National Planning Institute, Development Program of U.N., Cairo, 1994a.
- El-Mously H., *The Role of Environmental and Hand-Craft Industries in Rural Development*, UN's Development Program and Institute of National Planning, Cairo, 1994b.
- El-Mously, H., *Date Palm Leaves' Midrib (DPLM): Types, Calcification and Uses*, Centre of Small Industries Development, Faculty of Engineering, Ain Shames University, 1997, (in Arabic).
- Elsen, A., *Sustainable Service Design, What it is and Where it is going*, UNEP-WGSPD, Amsterdam, July 1997.
- ESCWA (Economic and Social Commission for Western Asia), *Potential of Manufacturing Small and Medium Enterprises for Innovation in Selected ESCWA Countries*, 25 April 2001, (E/ESCWA/ID/2001/2).
- European Report, *Environment / Employment*, Committee of the Regions, Luxembourg, November, 1997.
- Gad, M., *Productive Families Project among Environmental Industries*, Home Industries and Small Scale Industries, Ministry of Social Affairs and African-Asian Organization for Rural Activation, The International Colloquium of Management and Planning in Small Scale Industries Field, Cairo, 23 – 27 Jan. 1989.
- Gadalla M. Gadalla, *The Development of Small Scale Industries in Egypt*, Social Affairs Ministry, and African-Asian Organization for Rural Activation, the International Colloquium of Management and Planning in Small Scale Industries Field, Cairo, 23 – 27 Jan. 1989.
- Graham H., Dave C., *Regions and Sustainable Development: Regional Planning Matters*, Department of Geography, University of Hull, UK, *The Geographical Journal*, Vol. 170, No. 2, June 2004, pp. 135–145.



- Handousa, H. and Potter, G. (eds), *Employment and Structural Adjustment in Egypt in the 1990s*, American University in Cairo Press, 1991.
- Handousa, H., *Reform Policies for Egypt's Manufacturing Sector*, American University in Cairo Press, 1991.
- Handy, C., *The Elephant and the Flea: Looking Backwards to the Future*, Harvard Enterprises School Press, 2002. This article is available on the Leader to Leader Institute Web site, <http://leadertoleader.org/leaderbooks/L2L/spring2002/handy.html>.
- Hauser, H.-E., *SMEs in Germany Facts and Figures*, IfM Institute für Mittelstandsforschung Bonn, 2000. Available under [www.ifm-bonn.de/ergebnis/sme.zip](http://www.ifm-bonn.de/ergebnis/sme.zip).
- Hefnawy, A., *The Role of Small Scale Industries in Rural Development*, Department of Regional Planning, Faculty of Urban & Regional Planning, Cairo University, MSc thesis, 1998, (in Arabic).
- Hillary, R. (Ed.), *Evaluation of Study Reports on the Barriers, Opportunities and Drivers for Small and Medium Sized Enterprises in the Adoption of Environmental Management Systems*, Imperial College, University of London, 1999.
- Hillary, R. (Ed.), *Small and Medium-Sized Enterprises and the Environment-Business Imperatives*, Greenleaf Publishing, Sheffield, UK 2000.
- Hobbs, J., *Promoting Cleaner Production in Small and Medium-Sized Enterprises*, Greenleaf Publishing, Sheffield, UK 2000.
- Holdren, John P.; Daily, Gretchen C., and Ehrlich, Paul R., *The Meaning of Sustainability: Bio-geophysical Aspects*, United Nations University, The World Bank, Washington 1995.
- Howahi, A., *The Environmental Pollution of Small Scale Industries - How to Prevent*, Friedrich Ebert Stiftung and the Central Productive Cooperative Union, Cairo, 1995, (in Arabic).
- Israel, G. D., *Sampling the Evidence of Extension Program Impact*, Fact Sheet PEOD-5, Institute of Food and Agricultural Sciences, University of Florida, 1992.
- KPMG Environmental Consulting: *The Environmental Challenge and Small and Medium-Sized Enterprises in Europe*, The Hague 1997.
- Kuhndt, M., and von Geibler, J., *How Small and Not-So-Small Businesses can be Assisted in Improving their Triple Bottom Line Performance*, Wuppertal Institute, Eco-Efficiency and Sustainable Enterprise Team Director, Triple-Innovation, UNEP's 7th International High-Level Seminar on Cleaner Production, Prague, Czech Republic, April 29 – 30, 2002.
- Labib, Hala A., *A Statistical Model Suggestion to Measure Small Scale Industries Success*, Faculty of Commerce, Cairo University, Ph.D. 1995.

- Lamm- Tennant, J., and Olsen Richard A., *The Role of Enterprise Risk and Capital Management in the Value Creation Process*, Stamford, UK, February 2000.
- Levitsky, J., *Micro-enterprises in developing countries*, Intermediate Technology publications, London, 1989.
- Liedholm, C. and Mead, D., *The Dynamics of Micro and Small Enterprises in Developing Countries*, World Development, vol. 26, No. 1, January, 1998.
- Lindner, A., *Administrative and Statistical Business Frames, Definitions and Units –a Comprehensive International Review of National Strategies and Practices with Particular Focus on SME's*, 18th Roundtable on business survey frames, Beijing, China, October 18-22, 2004.
- Ministry of Housing, Utilities and Urban Communities, *Sustainable Human Settlements: the National Report of Egypt*, UN-HABITAT Conference: (Istanbul+5), New York, 2001.
- Mintzberg, H., *The entrepreneurial organization*, In: Mintzberg H, Quinn J.B, Ghosshal S. (Hrsg.), *The Strategy Process*. London: Prentice Hall, 1999.
- Mintzer, I., and Leonard, J., *Negotiating Climate Change: The Inside Story of the Rio Convention*, Cambridge University, Cambridge 1994.
- Moser CA, Kalton G. *Survey Methods in Social Investigation*, London: Heinemann, 1971.
- Munasinghe, M., and Shearer, W., *Defining and Measuring Sustainability – the Biogeochemical Foundation*, U.N. University & World Bank, 1995.
- Munasinghe, M., *The Economist Approach to Sustainable Development*, Finance and Development, World Bank, 1993.
- Nadvi, Khalid, *Industrial Clusters and Networks: Case Studies of SMEs Growth and Innovation*, United Nations Industrial Development Organization (UNIDO) Small and Medium Industries Branch, October 1995.
- OECD (Organization for Economic Co-operation and Development), *Effective Policies for Small Business a Guide for the Policy Review Process and Strategic Plans for Micro, Small and Medium Enterprise Development*, UNIDO, OECD, 2004.
- OECD (Organization for Economic Co-operation and Development), *Promoting SMEs for Development*, 2nd OECD Conference of Ministers Responsible for Small and Medium-Sized Enterprises (SMEs), Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards a more Responsible and Inclusive Globalization, Istanbul, Turkey 3-5 June 2004.
- PARC (Public Administration Research & Consultation Centre), *The Egyptian Millennium Development Goals at the Country Level*, UN, Cairo, June 2002.

- Pearce, D.W., and Turner R., *Economics of Natural Resources and the Environment*, Harvest Wheatsheaf, 1990.
- Pears, C., and Lawyer, K., *How to Organize and Operate a Small Business*, Prentice-Hall, LNC. NJ. 1961, P 4.
- Perrings, C., *Reserved Rationality and the Precautionary Principle: Technological Change, Time and Uncertainty in Environmental Decision Making in Ecological Economics: the Science and Management of Sustainability*, Ed. R. Costanza. Columbia Univ. Press, New York.: 1991, pp 153-166.
- Peter, R., Maya, F., *Corporate Social Responsibility: Implications for Small and Medium Enterprises in Developing Countries*, UNIDO, Branch of Small and Medium Enterprises, 2002.
- Quentin, Merritt J., *EM into SME won't go? Attitudes, Awareness and Practices in the London Borough of Croydon*, Business Strategy and the Environment, University of Greenwich, London, UK, 1998, Volume 7, Issue 2, pp. 90-100.
- Rabellotti, R., *Is There an Industrial District Model? Footwear Districts in Italy and Mexico Compared*, World Development, vol. 23, no. 1, Great Britain, 1995.
- Ravetz, J., *City-Region 2020: integrated planning for long term sustainable development*, Earthscan, London, 1998.
- Rydin, Y., and Thornley, A., *An Agenda for the New Millennium*, in Rydin Y., and Thornley A., (eds) *Planning in the UK: Agendas for the New Millennium*, Ashgate Publishing, Aldershot, 2001 , pp 1–10.
- Salmi, T., and Virtanen, I., *Economic Value Added: A Simulation Analysis of the Trendy, Owner-Oriented Management Tool*, Acta Wasaensia 90, Vaasa: University of Vaasa, Finland, 2001.  
Available freely in HTML and PDF formats from Internet:  
URL:<http://www.uwasa.fi/~ts/eva/eva.html> .
- Serageldin I., *Making development sustainable*, Finance and Development, International Monetary Fund and the World Bank, December 1993, pp. 6-10.
- SFD (Social Fund for Development), *Annual report of Egypt*, Cairo, 2002.
- Staley, E. and Morse, R., *Modern Small-Scale Industry for Developing Countries*, New York: McGraw-Hill Books Company, 1965.
- Stocchiero, A., *Euro-Med Cooperation on SME Clustering: Who, Where and What*, Third Mediterranean Social and Political Research Meeting, Workshop X, Industrial Districts and Local Clusters: An Alternative Pattern of Development and Economic Integration in the Mediterranean, Florence, 20-24 March 2002.

- Sutton, P., *The Sustainability-Promoting Firm, An Essential Player in the Politics of Sustainability*, Revised 19th February 1998, Originally presented to: Eco-politics Conference XL, University of Melbourne, 4th-5th October 1997.
- Timberg, T., *What we Know about Small and Medium Enterprise (SME) Finance in Indonesia*, Paper prepared for the Conference on the Road to Indonesian Economic Recovery, Jakarta, August 19, 1999.
- Toman, M.A., *The Difficulty in Defining Sustainability, Global Development and the Environment: Perspectives on Sustainability*, J. Darmstadter, Ed., Resources for the Future, Washington, DC, USA, 1992.
- Turner, R. K., Pearce DW., and Bateman, IJ., *Environmental Economics*, Harvester Wheatsheaf, London, 1994.
- Tybout, J., *Manufacturing Firms in Developing Countries: How Well Do They Do, and Why?* World Bank's Economic Development Institute, 2000.
- UN (United Nations), *Improving the Competitiveness of SMEs In Developing Countries: the Role of Finance to enhance Enterprise Development*, UN, New York and Geneva, 2001.
- UN (United Nations), *Reporting on the Millennium Development Goals at the Country Level of Egypt*, UN, Cairo, 2002.
- UNEP (United Nations Environment Programme), *Big challenge for small business: sustainability and SMEs, Industry and Environment*, October - December 2003. Available HTML and PDF formats from Internet: [www.uneptie.org/media/review/ie\\_home.htm](http://www.uneptie.org/media/review/ie_home.htm).
- UNEP (United Nations Environment Programme), Division of Technology, Industry and Economics: *Developing Better Systems for Communicating. Environmental Best Practice in Business*, final report, Paris 1997.
- UNIDO (United Nations Industrial Development Organization), *Potential of Manufacturing Small and Medium Enterprises for Innovation in Selected ESCWA Countries*, Small and Medium Industries Branch, October 1995.
- Van Weenen, H., *Design for Sustainable Development Practical Examples of SMEs*, European Foundation for the Improvement of Living and Working Conditions, Luxembourg, 1999.
- WBCSO (World Business Council for Sustainable Development), *Achieving Eco-efficiency in Business*, Second Antwerp Eco-Efficiency Workshop, UNEP, March 14 - 15, 1995.
- World Bank, *Arab Republic of Egypt: Country environmental analysis (1992 – 2002)*, Water and Environmental Department, The Middle East and North Africa Region, World Bank, 2005.
- World Bank, *Development and the Environment: World development Report*, Oxford University Press, 1992, Review P 33-40

- World Commission on Environment and Development, *Our Common Future*, Oxford University Press, Oxford, U.K., 1987.
- Zaalouk, M., *Power, Class, and Foreign Capital in Egypt: the Rise of the New Bourgeoisie*, Zed Books Limited, London, 1989.
- <http://www.balancedscorecard.org/basics/definitions.html>, last check was 17.08.2006.
- [www.escwa.org.lb/information/meetings/events/10-12june/background.html](http://www.escwa.org.lb/information/meetings/events/10-12june/background.html), last check was 17.08.2006.
- [www.eyefortransport.com/glossary/ab.shtml](http://www.eyefortransport.com/glossary/ab.shtml), last check was 17.08.2006.
- <http://www.indiainfoline.com/bisc/evaf.html>, last check was 17.08.2006.
- <http://www.oecdistanbul.org/dataoecd/2/53/33927420.pdf>, last check was 17.08.2006.
- <http://www.oecdistanbul.org/dataoecd/2/53/33927420.pdf>, last check was 17.08.2006.
- [www.planning.gov.sa/PLANNING/ALL%20PAPERS/DAY3/Small%20and%20Medium%20Enterprises/SME%20Development%20in%20Saudi%20Arabia/SME%20Development%20in%20Saudi%20Arabia.doc](http://www.planning.gov.sa/PLANNING/ALL%20PAPERS/DAY3/Small%20and%20Medium%20Enterprises/SME%20Development%20in%20Saudi%20Arabia/SME%20Development%20in%20Saudi%20Arabia.doc), last check was 17.08.2006.
- <http://www.sba.gov/size/sizetable2002.html>, last check was 17.08.2006.
- <http://www.lib.strath.ac.uk/busweb/guides/smedefine.htm>, last check was 17.08.2006.
- <http://www.sfdegypt.org/about.asp>, last check was 17.08.2006.
- <http://www.sfdegypt.org/publications.asp>, last check was 17.08.2006.
- <http://www.sis.gov.eg/En/Economy/intro/EconomicReform/050101000000000001.htm>, last check was 17.08.2006.
- <http://www.smallindustryindia.com/publications/areports/ar2002-03/ssi-eng0203.pdf>, last check was 17.08.2006.
- <http://www.smallindustryindia.com/ssiindia/definition.htm>, last check was 17.08.2006.
- <http://www.themanager.org/resources/Small%20Business.htm>, last check was 17.08.2006.
- [http://www.un.org/esa/sustdev/publications/critical\\_trends\\_report\\_2002.pdf](http://www.un.org/esa/sustdev/publications/critical_trends_report_2002.pdf), last check was 17.08.2006
- <http://www.wfgfi.com/MAY2004.pdf>, last check was 17.08.2006

**Appendix 1.1**  
**Questionnaire for entrepreneurs**

<b>Ismailia Governorate</b>	<b>THE ROLE OF SMALL MANUFACTURING ENTERPRISES IN SUSTAINABLE DEVELOPMENT</b> Ismailia governorate as a case study in Egypt By <b>Hefnawy – Abdulla</b>
<b>Location</b> :-----	
<b>Name of the interviewer:</b> -----	
<b>Date</b> :-----	
<b>Survey No.</b> :-----	
<b>Type of the SMEs activity</b> :-----	

**Questionnaire for the survey of the small manufacturing enterprises (SMEs) in Egypt  
(the Ismailia region as a case study)**

The objective of the survey is to collect data about the characteristics of SMEs and their impacts on sustainable regional development. The researcher is grateful for your cooperation, and assures you that all the information given in this questionnaire is confidential. No organization, governmental or non-governmental, public or private, will get access to any of this information. To ensure the confidentiality, the data will be processed in aggregation so that no answer from a particular individual or firm can be separately identified.

<b>1: Where you are practicing your enterprises as SME?</b> <ul style="list-style-type: none"> <li>- In my house</li> <li>- In a enterprise close to my house</li> <li>- In a enterprise further away from my house</li> <li>- In a small factory in my (city – district – village)</li> <li>- Other (specify)-----</li> </ul>	
<b>2: What is the year of first time operation?</b>	
<b>3: Did you have another job before starting your present enterprises?</b> <ul style="list-style-type: none"> <li>- Yes</li> <li>- No</li> </ul> If “YES”, <p><b>a- Was your previous job immediately before starting your enterprises</b></p> <ul style="list-style-type: none"> <li>- In similar activity</li> <li>- In agricultural sector</li> <li>- In services sector</li> <li>- In public sector</li> <li>- Other (specify)-----</li> </ul> <p><b>b- What did motivate you to change from your previous activity?</b></p> <ul style="list-style-type: none"> <li>- Unhappy with the previous job</li> <li>- Improve my income</li> <li>- Develop my activity</li> <li>- Other (specify)-----</li> </ul>	
<b>4: What is the source of your experience in this enterprise?</b> <ul style="list-style-type: none"> <li>- Inherited industry (Father’s/relatives’ works)</li> <li>- Qualifying and training centre</li> <li>- Training in a enterprise or a factory</li> <li>- Vocational and technical school</li> <li>- Other (specify)-----</li> </ul>	

<p><b>5: How many employees are employed in your enterprise?</b></p> <p><b>a- The skill levels of employees :</b></p> <ul style="list-style-type: none"> <li>- Skilled (Category 1)</li> <li>- Semi skilled (Category 2)</li> <li>- Unskilled (Category 3)</li> <li>- Total employees</li> </ul> <p><b>b- The origin of employees</b></p> <ul style="list-style-type: none"> <li>- Close relatives</li> <li>- Extended relatives</li> <li>- From my (city – district – village)</li> <li>- Outside of my (city – district – village)</li> </ul> <p><b>c- The average of the monthly wages of the employees</b></p> <ul style="list-style-type: none"> <li>- Employees category 1:</li> <li>- Employees category 2:</li> <li>- Employees category 3:</li> </ul> <p><b>6: What is the educational background of the employees in your enterprise? (specify number of employees at each level)</b></p> <ul style="list-style-type: none"> <li>- University degree</li> <li>- Secondary school</li> <li>- Diploma or vocational training</li> <li>- Basic education</li> <li>- School drop-out</li> <li>- No qualification</li> <li>- Other (specify)-----</li> </ul>	
<p><b>7: How large is the working space of your enterprise?</b></p>	
<p><b>8: How much is the capital of your enterprise? (excluding land and building)</b></p>	
<p><b>9: How much is the cash flow of your enterprise?</b></p>	
<p><b>10: How are the raw materials transported?</b></p> <ul style="list-style-type: none"> <li>- Trailers</li> <li>- Trucks</li> <li>- Half truck</li> <li>- Quarter truck</li> <li>- Other (specify)-----</li> </ul>	

<b>11: How often do you receive raw materials?</b> <ul style="list-style-type: none"> <li>- Daily</li> <li>- Weakly</li> <li>- Monthly</li> <li>- Other (specify)-----</li> </ul>																																																															
<b>12: How much is the cost of transportation for one load of raw materials?</b>																																																															
<b>13: How do you store your raw materials?</b> <ul style="list-style-type: none"> <li>- Inside the enterprise</li> <li>- In a storage place close to the enterprise</li> <li>- Other (specify)-----</li> </ul>																																																															
<b>14: What are the types of used equipments and machines? (Approximate ratios)</b> <ul style="list-style-type: none"> <li>- Handy craft equipment</li> <li>- Electric machines</li> <li>- Half-Automatic machines</li> <li>- Automatic machines</li> </ul>																																																															
<b>15: What type of final products do you produce and how do you market them?</b>																																																															
<b>a- Number of the final products, their volume, their prices and marketing</b>																																																															
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2" style="width: 15%;">Final products type</th> <th colspan="3" style="width: 35%;">The final product</th> <th colspan="5" style="width: 40%;">Marketing method of final products</th> </tr> <tr> <th style="width: 10%;">Volume per month</th> <th style="width: 10%;">Price/unit</th> <th style="width: 15%;">Total price</th> <th style="width: 10%;">The owner him self</th> <th style="width: 10%;">Wholesaler</th> <th style="width: 10%;">Retailer</th> <th style="width: 10%;">Government showrooms</th> <th style="width: 15%;">Other (specify)</th> </tr> </thead> <tbody> <tr> <td>1:-----</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2:-----</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3:-----</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4:-----</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5:-----</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Final products type	The final product			Marketing method of final products					Volume per month	Price/unit	Total price	The owner him self	Wholesaler	Retailer	Government showrooms	Other (specify)	1:-----									2:-----									3:-----									4:-----									5:-----									
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2:-----																																																															
3:-----																																																															
4:-----																																																															
5:-----																																																															
<b>b- The markets for final products</b> <ul style="list-style-type: none"> <li>- Local market only</li> <li>- Regional market</li> <li>- National market</li> <li>- Other (specify)-----</li> </ul>																																																															
<ul style="list-style-type: none"> <li>- <b>c- When do you sell your final products</b></li> <li>- Daily</li> <li>- Weakly</li> <li>- Monthly</li> <li>- Other (specify)-----</li> </ul>																																																															



**16: Energy and water supply**

Electric energy		Natural gas		Heavy gas		Solar energy	Wind energy	Water	
Volume per month	Cost per month	Volume per month	Cost per month	Volume per month	Volume per month			Cost per month	Cost per month

**d- Do you bear the transport cost of final product**

- Yes
- No

if “Yes”,

**- How much is the cost of transportation for one delivery of final products?**

**- What is the mode of transportation of the final products?**

- Trailers
- Trucks
- Half truck
- Quarter truck
- Other (specify)-----

**17: Solid wastes**

**a- The quantity of solid waste (kg/day)**

**b- Types of the solid wastes (Approximate percentage)**

- Glass
- Sawdust of wood
- Small parts of wood
- Iron filings
- Small pieces of metals
- Fabric rest
- Bio wastes

**c- Dealing with the solid waste**

- Recycling processes
- Selling them as residual product
- Collected by private enterprise in return for monthly share
- Disposal in the garbage areas
- Other (specify)-----

<p><b>18: Liquid waste</b></p> <p><b>a- The volume of liquid waste (m<sup>3</sup>/day)</b></p> <p><b>b- Types of liquid waste (Approximate percentage)</b></p> <ul style="list-style-type: none"> <li>- Lubricants and oils</li> <li>- Pigment and chemical cleaning materials</li> <li>- Turbid water*</li> <li>- Other (specify)-----</li> </ul> <p><b>c- Dealing with the liquid wastes</b></p> <ul style="list-style-type: none"> <li>- Throw in the general drainage network without treatment</li> <li>- Throw in the general drainage network after partial treatment</li> <li>- There is a private manufacturing drainage collection system in the enterprise</li> <li>- Other (specify)-----</li> </ul>	
<p><b>19: Did you get any governmental support?</b></p> <ul style="list-style-type: none"> <li>- Yes</li> <li>- No</li> </ul> <p>If “YES”, what is the kind of support which you have got?</p> <ul style="list-style-type: none"> <li>- Financial support (how much, specify the value and the year)</li> <li>- Marketing the final products</li> <li>- Grant for the purchase of the raw materials</li> <li>- Tax exemption for a specified period (How long)</li> <li>- Other (specify)-----</li> </ul>	
<p><b>20: Is your enterprise facing any problem?</b></p> <ul style="list-style-type: none"> <li>- Yes</li> <li>- No</li> </ul> <p>If "YES", what is the kind of problems?</p> <ul style="list-style-type: none"> <li>- Marketing problem</li> <li>- Financial problem</li> <li>- Production problem</li> <li>- Absence of skilled employees</li> <li>- Other (specify)-----</li> </ul>	

---

\* Turbid water is water mixed with cleaning materials and pending particles resulting from production process.

<p><b>21: What are the available safety conditions in your enterprise?</b></p> <ul style="list-style-type: none"> <li>- Protection cover of the head for employees</li> <li>- Special work gloves</li> <li>- Special glasses to protect the eyes</li> <li>- Ear protection</li> <li>- Respiration protection</li> <li>- Special shoes to protect the feet</li> <li>- Special uniform</li> <li>- Fire fighting</li> <li>- Artificial air ventilation</li> <li>- Natural ventilation</li> <li>- First aid equipment</li> <li>- Ceiling fans</li> <li>- Other (specify)-----</li> </ul>	
<p><b>22: What is the pattern of maintenance of the machines and equipment of your enterprise?</b></p> <p><b>a- How often do you do maintenance of your machines and equipments?</b></p> <ul style="list-style-type: none"> <li>- Daily</li> <li>- Weakly</li> <li>- Monthly</li> <li>- Semi annually</li> <li>- Annually</li> <li>- Other (specify)-----</li> </ul> <p><b>b- Who takes care of the maintenance of your machines and equipments?</b></p> <ul style="list-style-type: none"> <li>- An expert from outside the enterprise</li> <li>- Specialist from inside the enterprise</li> <li>- The employees themselves</li> <li>- Other (specify)-----</li> </ul>	
<p><b>c- How much do you spend annually for the maintenance? ( Approximate value)</b></p>	
<p><b>23: How many employees in your enterprise have social insurance?</b></p>	
<p><b>24: do you having wisher to transfer your activity to the nearest industrial zone in your region?</b></p> <ul style="list-style-type: none"> <li>- Yes, without any conditions</li> <li>- Yes, but with some conditions (specify these conditions):</li> <li>-----</li> <li>-----</li> <li>-----</li> <li>-----</li> <li>-----</li> <li>- No, (specify the reasons):</li> <li>-----</li> <li>-----</li> <li>-----</li> <li>-----</li> </ul>	

## Appendix 1.2

### Questionnaire for employees in the field of SMEs

<b>Ismailia Governorate</b>	<b>THE ROLE OF SMALL MANUFACTURING ENTERPRISES IN SUSTAINABLE DEVELOPMENT</b> Ismailia governorate as a case study in Egypt  By <b>Hefnawy – Abdulla</b>
<b>Location</b> :-----	
<b>Name of the interviewer:</b> -----	
<b>Date</b> :-----	
<b>Sample No.</b> :-----	
<b>Type of the activity</b> :-----	

#### Questionnaire for the survey of the employees of the small manufacturing enterprises (SMEs) in the Ismailia region

The objective of the survey is to collect data about the living standard and the quality of life of employees of SMEs and their families. The researcher is grateful for your cooperation, and assures you that all the information given in this questionnaire is confidential. No organization, governmental or non-governmental, public or private, will get access to any of this information. To ensure the confidentiality, the data will be processed in aggregation so that no answer from a particular individual or firm can be separately identified.

#### 1: What is the number of members in your family and what are their social characteristics? (Fill the following table)

No.	Age	Gender	Relationship with the interviewer	Marital status	Educational status		Employment status			Notes
					Still in studying	Educational qualification	Working	Newly unemployed*	unemployed*	
1										
2										
3										
4										
5										
6										
7										
8										
9										

**a- Code of the marital status:**

-1 single,-----, - 2 married, -----, - 3 divorced, -----, - 4 widower.

**b- Code of Educational status:**

- 1 illiterate, ----, - 2 read-write, ----, - 3 Diploma, secondary school or vocational training, - 4 high medial qualification, -----, - 5 University degree, ----, - 6 drop-outs from school

**2: Were you born in this community?**

- Yes
- No

If “NO”,

**a- Where were you born?**

- In a village, a district or a city at the regional level (specify)-----
- In a village, a district or a city at the national level (specify)-----

**b- Why and when have you moved to live in this community? (specify)-----**

-----

**c- Did you travel to work abroad before?**

- Yes
- No

\*Newly unemployed means that, the person who has got training or educational qualification, but he did not find any job till now.  
 \* Unemployed means that, the person who had a job and he has the ability to work but he does not work now.

<p><b>3- What is the kind of accommodation you are living in?</b></p> <ul style="list-style-type: none"> <li>- Single private house</li> <li>- Private apartment</li> <li>- Short-term rental apartment (specify the rental value per month)</li> <li>- Long-term rental apartment (specify the rental value per month)</li> <li>- Other (specify)-----</li> <li>-</li> </ul>	
<p><b>4- How many floors are in the building you are living in?</b></p> <ul style="list-style-type: none"> <li>- 1 to 2 floors</li> <li>- 3 to 4 floors</li> <li>- 5 to 7 floors</li> <li>- More than 7 floors</li> </ul>	
<p><b>5- What is the kind of structure of the building you are living in?</b></p> <ul style="list-style-type: none"> <li>- Adobe bricks block</li> <li>- Bearing-walls structure</li> <li>- Skeleton concrete construction</li> <li>- Other (specify)-----</li> </ul>	
<p><b>6- What are the kinds of basic utilities and infrastructure in the building you are living in?</b></p> <p><b>a- Water supply</b></p> <ul style="list-style-type: none"> <li>- General network</li> <li>- A water pump for underground water</li> <li>- Other (specify)-----</li> </ul> <p><b>b- Connection with general sewage network</b></p> <ul style="list-style-type: none"> <li>- Connected</li> <li>- Not connected</li> </ul> <p><b>c- Connection with general electricity network</b></p> <ul style="list-style-type: none"> <li>- Connected</li> <li>- Not connected</li> </ul> <p><b>d- Connection with general communication network</b></p> <ul style="list-style-type: none"> <li>- Connected</li> <li>- Not connected</li> </ul> <p><b>e- Connection with general natural gas network</b></p> <ul style="list-style-type: none"> <li>- Connected</li> <li>- Not connected</li> </ul>	
<p><b>7- What is the kind of exterior paint of the building you are living in?</b></p> <ul style="list-style-type: none"> <li>- Lime paint</li> <li>- Cement paint</li> <li>- Oil paint</li> <li>- Other (specify)-----</li> <li>-----</li> <li>-----</li> </ul>	

<p><b>8- How is the state of the building you are living in?</b></p> <ul style="list-style-type: none"> <li>- Good</li> <li>- Fair</li> <li>- Bad</li> </ul>	
<p><b>9- How many rooms has the dwelling you are living in (include the hall)?</b></p> <ul style="list-style-type: none"> <li>- Number of rooms</li> <li>- Number of bathrooms</li> <li>- Number of kitchens</li> </ul>	
<p><b>10- Do you have private transport facility?</b></p> <ul style="list-style-type: none"> <li>- Yes</li> <li>- No</li> </ul> <p>if “YES”, what is the kind of facility you have?</p> <ul style="list-style-type: none"> <li>- Private car</li> <li>- Private motorcycle</li> <li>- Private bicycle</li> <li>- Other (specify)-----</li> <li>-----</li> <li>-----</li> </ul>	
<p><b>11: What are the kinds of electrical appliances you have?</b></p> <p><b>a- Washing machine</b></p> <ul style="list-style-type: none"> <li>- Ordinary</li> <li>- Half automatic</li> <li>- Full automatic</li> </ul> <p><b>b- Refrigerator</b></p> <p><b>c- Stove</b></p> <p><b>d- Television</b></p> <ul style="list-style-type: none"> <li>- Black and white</li> <li>- Coloured</li> </ul> <p><b>e- Video recorder</b></p> <p><b>f- Heaters</b></p> <p><b>g- Air-conditioners</b></p> <p><b>h- Satellite receiver</b></p> <p><b>i- Communication devices</b></p> <ul style="list-style-type: none"> <li>- Ordinary telephone</li> <li>- Mobile phone</li> </ul>	
<p><b>12: How much is your monthly cost of living? (specify approximately in Egyptian pound)</b></p>	

<p><b>13: What is the source of your experience in this enterprises (SMEs)?</b></p> <ul style="list-style-type: none"> <li>- Inherited industry (Father's/relatives' works)</li> <li>- Qualifying and training centre</li> <li>- Training in a enterprise or a factory</li> <li>- Vocational and technical schools</li> <li>- Other (specify)-----</li> <li>-----</li> <li>-----</li> </ul>	
<p><b>14: Did you have another job before starting your present one?</b></p> <ul style="list-style-type: none"> <li>- Yes</li> <li>- No</li> </ul> <p>If "YES",</p> <p><b>a- What was your previous job immediately before starting your present work?</b></p> <ul style="list-style-type: none"> <li>- In similar activity</li> <li>- In agricultural sector</li> <li>- In services sector</li> <li>- In public sector</li> <li>- Other (specify)-----</li> <li>-----</li> <li>-----</li> </ul> <p><b>b- What did motivate you to change from your previous activity?</b></p> <ul style="list-style-type: none"> <li>- Unhappy with the previous job</li> <li>- Improve my income</li> <li>- Other (specify)-----</li> <li>-----</li> <li>-----</li> </ul> <p><b>c- Do you practice any other activities beside your current work?</b></p> <ul style="list-style-type: none"> <li>- Yes</li> <li>- No</li> </ul> <p>If "YES", what are these activities?</p> <ul style="list-style-type: none"> <li>- Agricultural</li> <li>- Services</li> <li>- Commerce and trade</li> <li>- Other (specify)-----</li> <li>-----</li> <li>-----</li> </ul>	
<p><b>15: How much is your monthly income?</b></p>	

**Appendix (A2.1): The comparison among selected countries in terms of definition of SMEs**

The country	Specifying type of SMEs	Quantitative measures of SMEs				Notes
		Number of employees	Invested capital per US \$	Annual turnover per US \$	Annual balance sheet per US \$	
EU	All types	Till 49	....	12,7 million	12,7 million	conform to the criterion of independence as the enterprise should own 25% or more of the capital, or voting rights of
USA	Manufacturing and mining industries	Till 500	....	....	....	
	Wholesale trade industries	Till 100	....	....	....	
	Retail and service industries	....	....	6 million	....	
	General & heavy construction industries	....	....	28,5 million	....	
	trade contractors	....	....	12 million	....	
	agricultural industries	....	....	0,75 million	....	
Japan	manufacturing, construction and transportation	300	2,6 million	....	....	
	wholesale trade	100	0,86 million	....	....	
	services industry	100	0,86 million	....	....	
	retail trade	50	0,43 million	....	....	
India	All type	....	2,041 million	....	....	
Bangladesh	All type		4,9 million	....	....	Up to 20 with mechanic power. Up to 150 without mechanic power
Pakistan	All type		Till 166,7		....	
China	manufacturing	2000	48,2 million	36,2 million	....	
	wholesale and retail	500	....	18,1 million	....	
	transportation industry	3000	....	36,2 million	....	

Source: Adopted by the researcher, based on data gathered from different references



### **Appendix 3.1 Brief summary of the major laws related to SMEs**

#### **1- Law no. 93 for the Year 1962**

(Concerned with the discharging of liquid wastes in public sewers, on land and in the sea): Article 14 of this law; different enterprises are not allowed discharging or disposing of untreated substances into public sewers. Permission of disposal of treated liquid wastes takes place as per specifications and standards issued with the regulations of the Ministerial Decision No. 9 for the year 1989 (Ministry of Housing) and the law No. 48 for the year 1982, that is concerned with the protection of surface water resources.

The Ministerial decree No. 470 for the year 1971 (Ministry of Health) enclosed regulations specifying the standards of air pollutants. Article 3 of this decision gives right of closing the violating enterprise by the administrative authority. As reported in this study, most small scale industrial enterprises violate the former laws and decisions. The Ministerial decree No. 55 for the year 1983 (Minister of Health) relates to the organizing of precautions for occupational health and safety in working places. The decree is concerned with the locations of enterprises according to the law of urban development, air pollution sources and types of working environments, provision of suitable means of elimination, adoption of means for aeration, ventilation and the protection of workers against pollution by using personal protective devices that protect workers against noise, poor ventilation, illumination and heat stress, as well as the risk of electric shock, fire and falls.

#### **2- Law No. 38 for the year 1967 and Law no. 31 for the year 1976**

The tow laws are concerned with the collection, treatment and disposal of solid wastes. There is however no existing laws or regulations that address sludge management or disposal in any meaningful manner. Law 48/1982 does prohibit the disposal of solid wastes from sanitary drainage operations into waterways.

#### **3- Law No. 3 for the Year 1982**

(Concerned with urban planning and is implemented by the Ministry of Housing, Utilities and Urban Communities): Article 32 of this law defines industrial areas as locations for installing factories, workshops and laboratories or other enterprises that practice any activity which may emit or release harmful substances or cause annoyance to human beings. The same article prevents the installation of these enterprises within residential areas. However this article of the law is not enforced.

#### **4- Law no. 4 for the year 1994**

The Environmental Law (Law No. 4 for the year 1994) is considered one of the Egyptian contributions to protect the environment. This law was the direct result for Rio summit 1992. All of the new enterprises or the extension of the current enterprises should respect this law. The current enterprises have to adjust their situations in three years after publishing the executive regulation of this law. It is concerned with the environment and the executive regulations issued by the Prime Minister's decree No. 338 for the year 1995. This is Egypt's most comprehensive environmental legislation and is an important milestone in improved environmental management. The law and its executive regulation have defined the role of EEAA; addressed air quality issue and set the first air emission standards (Section two of the executive regulations) and made important provisions for a permitting system for hazardous waste handling as well as for disposal and treatment (Section One, Chapter 2) In the general articles of the law, the untreated industrial solid, liquid and gaseous wastes are considered environmental pollutants.

Article No. 28 of the same law states that it is forbidden, without a permit from the competent agency, the handling of hazardous wastes according to the list issued by the EEAA, in cooperation with the Ministry of Health and other competent ministries. Article 33 of the law makes it mandatory for anyone producing hazardous substances in any form to take all precautions necessary to ensure that no harm shall befall the environment. The owner of the establishment shall keep record of these wastes and means of disposing of them. In case of violation of the rules of Article 29, the penalty shall be imprisonment for not less than five years and a fine of not less than twenty thousand Egyptian pounds and not more than forty thousand Egyptian pounds. Those who violate the rules of Article 33 shall face the penalty of imprisonment and a fine of minimum ten thousand and a maximum of twenty thousand Egyptian pounds, or either of those two penalties.

EEAA has issued a list of hazardous wastes, but it is not yet official. According to the Basal Convention for Hazardous Wastes, a substance or waste is considered hazardous if it is; explosive, flammable, and liable to spontaneous combustion, oxidizing, poisonous, infectious, corrosive and ecotoxic. Waste is also considered hazardous if it interacts with air or water, thus producing other materials which may have any of the above mentioned characteristics. The liquid and solid wastes of the textile and tanning industries are some examples of hazardous wastes released by SMEs, and containing heavy metals and corrosive materials as well as infectious wastes.

In Article No. 36 of the executive regulations, and Article 35 of Law No. 4 for the year 1994, emissions of air pollutants should not exceed the MAC listed in Annex 5 of the regulations. The penalties for violating the laws are twenty thousand Egyptian pounds. Concerning the solid wastes of industrial enterprises, article 37 of the law and Article 38 of the regulations forbid the dumping or burning refuse and solid wastes except in designated areas far from residential, industrial and agricultural areas. Penalty of violation is twenty five thousand Egyptian pounds. Concerning the types of fuel used by small-scale industries, it is forbidden to use mazot and heavy oil petroleum products as fuel sources in residential areas. Enterprise owners should secure efficient ventilation and install stacks for air purification.

Concerning the working environments, article 43 of Law 4 and Article 45 of the regulations discuss air pollution standards while Article 44 of the law and Article 46 of the regulations discuss temperature and humidity. Article 45 of the law and article 47 of the regulations deal with noise. It sets the ceiling for noise pollution (loudness and duration). Enforcement appears to be limited, at best.

**Appendix (A 5.1): The products of SMEs in the study area according to the type of industry**



**Some woods and furniture products of SMEs in the study area. Field survey 2003.**



Some kinds of SMEs in the field of metal industries in the study area. Field survey 2003.



Some kinds of SMEs in the field of food industries in the study area. Field survey 2003.



Some kinds of products in the field of Date Palm Leaves' Midrib (DPLM) in the study area. Field survey 2003.



Some kinds of SMEs in the field of textile and clothes industries in the study area. Field survey 2003.

Appendix (A 6.1): some photos for Wood trees project planted on the water of treated sanitary drainage in the study area





