

**The Competitive  
Advantage  
Of  
Small and Medium Sized  
Enterprises:**

**The Case of Jordan's Natural Stone  
Industry**

**Suhail Sami Sultan**

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# **The Competitive Advantage Of Small and Medium Sized Enterprises: The Case of Jordan's Natural Stone Industry**

PROEFSCHRIFT

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## **CHAPTER ONE**

### **INTRODUCTION**

There has been a belief among economists and others that natural resources are a blessing which means that countries richly endowed with natural resources have an advantage over countries that are not. Natural resources endowments have helped many countries to grow and diversify, in part by providing a basis for developing associated technologies and capital goods industries (Gaitan and Roe 2005; Ding and Field 2004). That is why people moved to where natural resources were abundant<sup>1</sup> - for example to Australia and to oil-rich countries in the Middle East.

Since the end of World War II, the picture has been changed. Natural resources are less often a blessing. Many countries including Iraq, Nigeria, and many other mineral wealthy countries have not translated into economic and social well-being for the majority of the population (Sachs and Warner 2001). The Dutch disease<sup>2</sup> is perhaps the most well-known effect of natural resource rents on the real economy. Another problem, of resource-rich economies is volatility, with cycles of boom and bust. Unless a resource-rich economy has a large non-resource based tradable sector to begin with, the uncertainty associated with cycles of boom and bust can reinforce a downward cycle (Gylfason and Zoega 2001).

---

<sup>1</sup> There are many ways to define natural resource abundance- for example as the share of natural resources in the gross domestic product (GDP) or exports.

<sup>2</sup> High exports of natural resources cause an appreciation of a country's real exchange rate, which moves its productive resources away from tradable such as manufactured goods.

In the Middle East, most of the research studies that discuss the relationship between the natural resources and the economic growth focus on the oil and gas and ignoring other natural resources such as the natural stone. The production and trade in natural stone began to spread from Europe to other countries at the beginning of the 19<sup>th</sup> century. In 1926, 1.5 million tons of stone were produced in a total of 42 countries (Stone 2003). In 2003, the annual global production of natural stone blocks has risen to 75 million tones. Almost (50%) of this consists of marble and other colored stones, (40%) of granite and other hard stones and (10%) of travertine and onyxes (Stone 2003).

Jordan is rich with the mineral resources such as phosphate, potash and natural stone. Unfortunately, the history of the Jordanian stone industry in recent years is not well documented (UNIDO 2004). The Little historical data are available about the importance of the industry to the development of the country, since its independence in 1946. The Jordanian firms did not export significant amounts of their local stones until the year 2001 (UNIDO 2004). Jordanian marbles are of particular interest for the export markets with golden color tones, beige and pink and beige and gray or darker gray colored tones. All of these good qualities are good-natured to good polish. In addition, there is a specific variety of light beige limestone. In addition to the unique types, the red stone is found in the central region of Jordan (JMOP 2003).

Most natural stone processing companies in Jordan started business since 1960s and 1970s by importing marble and granite from Palestine, Italy, Spain and Portugal, processing them locally and selling them in the domestic and regional markets (JOSTONE 2003). The main reason for not extracting natural stone before 1990s is that the majority of the natural stone stock in Jordan is located in the western part of the country and most of these areas were considered closed military zones before the peace agreement between Israel and Jordan has been signed in 1994; it was very difficult to get a license to start up a quarry especially where dynamites were used to extract stones (JMOP 2003).

The question raises is why there is a difference in performance across resource-rich countries. Successful management of a natural resource calls for a combination of policies and institutions. On the economic policy side, counter-cyclical stabilization policies have a critical role to play, as do policies that maintain the competitiveness. On the institutional front, institutions such as transparency, and checks and balances on the use of rents, that increase the costs of nonproductive activities can help countries to move away from rent-seeking equilibrium to more dynamic, diversified and growing economies (Toman 2003).

In this introductory chapter, the natural stone sector in Jordan is presented. Furthermore, the competitive advantage as a conceptual framework is discussed. Additionally, the research problem, objective, questions and hypotheses are described with an overview to the contents of the chapters discussed in the dissertation.

## **1. 1. Natural Stone and Jordan**

This section presents the historical background and the current status of the natural stone sector in Jordan. The question that comes to the mind after reading this section is whether the stone industry can assist in building the economy in the Hashemite Kingdom of Jordan as it did in ancient Jordan or not?.

### **1.1.1. Historical Background**

The land of Jordan is a geographic-prize area which changed hands many times throughout antiquity. Parts of Jordan were included in the dominions of ancient Iraq, including the Sumerian, Akkadian, Babylonian, Assyrian and Mesopotamian Empires. From the west, Pharaonic Egypt extended its power and culture into Jordan, while the nomadic Nabateans built their empire in Jordan after migrating from the south of the Arabian Peninsula. Jordan, as well, was incorporated into the classical civilizations of Greece, Rome and Persia. Since the mid-seventh century CE, the land of Jordan has remained almost continuously in the hands of various Arab and Islamic dynasties (JTB 2005).

Although Petra (figure 1.1) was inhabited by the Edomites before the arrival of the Nabateans, the latter carved grandiose buildings, temples and tombs out of solid sandstone rock. Petra is about 3-4 hours driving south of modern Amman on the edges of the mountainous desert of Wadi Araba. The city is surrounded by towering hills of rust-colored sandstone, which gave the city some natural protection against invaders. The site allowed the Nabataeans to carve their temples and tombs easily into the rocks (JTB 2005).

**Figure 1.1. Photo of Petra, Jordan**



*Source: JTB 2005*

Amman, ancient Philadelphia, was built approximately 7000 BC (JTB 2005). It is one of the oldest continuously inhabited cities in the world. There are many Biblical references to the city, which by about 1200 BC had become the Ammonite capital of Rabbath-Ammon. The Roman Theater (figure 1.2) is the most impressive historical object of ancient Philadelphia. The theater, which was built during the control of Antonius Pius (138-161 BC), is cut into the northern side of a hill that once served as a graveyard. It is very similar in design to the amphitheater at Jerash, and can accommodate 6000 spectators. The theater is still used periodically for cultural events (JMOTA 2005).

**Figure1.2. Photo of the Roman Theater-Amman,**



*Source: JTB 2005*

Jerash, which was established in the first century AD, is one of the most attractive sites in Jordan (JTB 2005). This city (figure 1.3) is located to the north of Amman in a fertile and well-watered valley. Theaters and temples were continuously added during the occupation of the Roman Empire. The South Theater, the biggest of Jerash's three amphitheaters, is used for activities of international music and dance groups at Jerash annual summer festivals (JMOTA 2005).

**Figure 1.3. Photo of Jerash, Jordan**



*Source: JTB 2005*

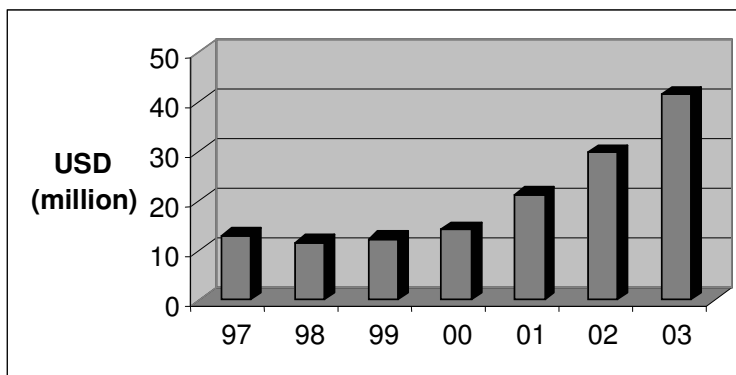
Ajloun Castle, more formally known as Qualm er-Rabad, is the major ancient site within the Ajloun forests region. It towers above the green hills and can be seen from many miles away, betraying its strategic purpose as a military watch post that protected the trade routes in the 12th-15th centuries. Inside, the castle is a labyrinth of vaulted passages, winding staircases, long ramps, enormous rooms that served as dining halls, dormitories, and stables, a total of 11 water cisterns, and the private quarters of the Lord of the Castle (complete with a small stone bathtub and rectangular windows that convert into arrow-slits for defensive purposes) (JTB 2005).

### 1.1.2. Current Situation

Jordan's mining industry is one of the main contributors to economic growth and a principal generator of national income. The government of Jordan paid special attention to this sector and gave the Natural Resources Authority (NRA) the responsibility of supervising the exploring, prospecting and mining activities in Jordan. Investment in the mining sector in 2000 was 1.12 billion US dollar. The extractive industries share of this investment is (67.8%), while the remaining (32.2%) are investments in manufacturing industries, which depend on mining products. The contribution of exports of the mining sector to national export for the years (1995-2001) ranges from 37-45% (NRA 2003). Large-scale industries in Jordan consist mainly of phosphate and potash mining. Exports of phosphate, potash and cement represented 90% of the mining sector's export in 1999 (JIB 2003).

Today the Jordanian stone industry experienced a significant growth due to the recent trade agreements with the US and the EU. Since then, the stone industry has received a lot of attention, and is expanding. Figure (1.4) shows the continuous growth of the natural stone from 1997 till 2003. Large investments, using the state of the art technology, are being deployed to achieve such goals (JMOP 2003). The processing equipment utilized by the Jordanian companies had a positive trend over the past 10 years with a (250%) increase during the years 2000-2002 (JMOP 2003).

**Figure 1.4 Natural Stone Gross Output - Jordan**



Source: JMOIT 2005

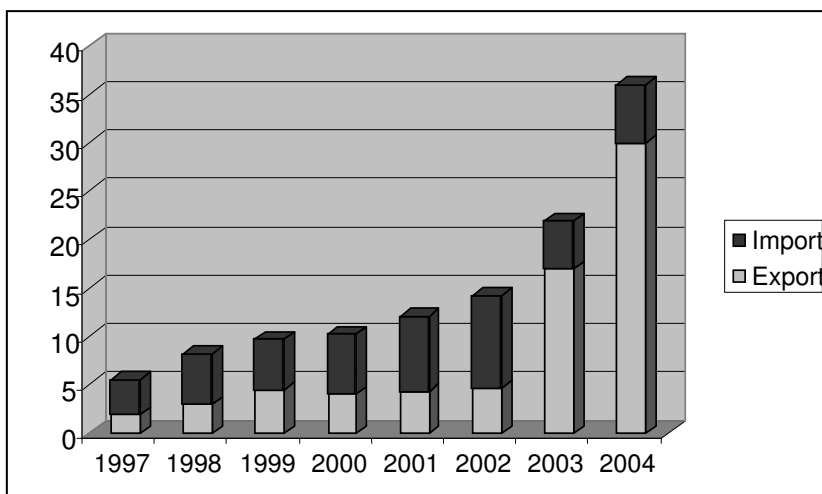
In addition to the openness of the Jordanian economy, the internal political stability under the Hashemite leadership represented by His Majesty King Abdullah II promotes long term investments in Jordan. Furthermore, many Palestinians and Iraqis moved to live and invest in Jordan due to the unstable situation in their countries. As well, the less tighten procedures for issuing permits to start up quarries and the availability of the infrastructure which supports the natural stone firms in their extractive activities assists the growth of the industry (for example, in 2001 about 60 quarry permits were issued (JMOP 2003)).

Figure (1.5) shows that the volume of imports is higher than the volume of exports during years (1997-2002), but the situation is completely changes in the years 2003 and 2004. The volume of exports increases in an unexpected way. The reasons that may explain the increase in the volume of exports are: the increase in the gross output of the natural stone; the opening up of the economy; and the increase in the demand of the Jordanian natural stone in the international markets. However, still there are stones in Jordan that have to be developed into marketable stone material (JMOIT 2005). The decrease in the volume of imported material could be explained by different reasons: the greater part of the natural stone sector in Jordan is covered by the local products due to its relatively low price, high quality, and short delivery time. In addition, the imports from Italy decreased due to the high prices of the Italian marble as well the import from Palestine has also decreased due to the Israeli restrictions on the borders<sup>3</sup>.

---

<sup>3</sup> Almost 77% of Jordan's imports are from Italy and Palestine. Jordan imports blocks from Palestine, processing these blocks in Jordan and selling the final products in Jordan or abroad. While the high-class Jordanians import the Italian marble for the luxury uses. Recently, the Jordanians started to import marble and granite from Egypt, China, and India but still in small quantities.

**Figure 1.5. Exports and Imports - Jordan**

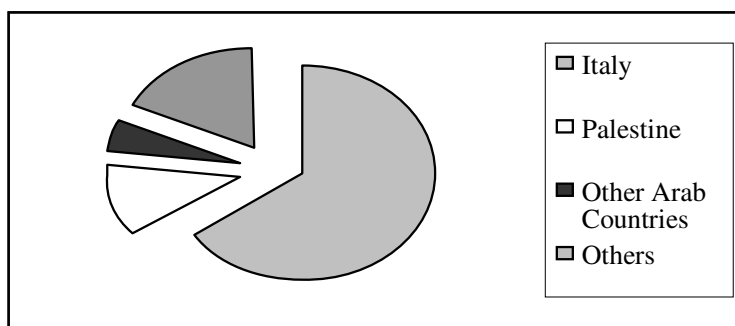


*Source: MIT 2005*

Figure (1.6) shows the distribution of Jordan's natural stone imports in 2000. The bulk imports mainly from Italy, which represent (65%), Palestine (12%), other Arab countries (5%) and others (18%). The Jordanians import the colored marble especially the green one from Italy for the luxury uses. This imported quantity has decreased as shown in figure (1.5). However, the incidence of intra-industry trade is generally associated with good growth performance (Edwards 1998; Rodrik and Rodriguez 2000; and Wacziarg and Welch 2002).

The extensive production in Jordan is focused on three kinds of natural stones: limestone, granite and marble. The limestone is distributed in Ma'an area, 210 km South of Amman, Azraq area, 90 km East of Amman, El-Ala area, 15 km South of Amman and Ajlun area, 50 km North of Amman. The granite is distributed in Aqaba area. While marble, is thermo-metamorphosed fully re-crystallized limestone, consists of semi-crystallized green, brown, dark violet and black (JMOP 2003).

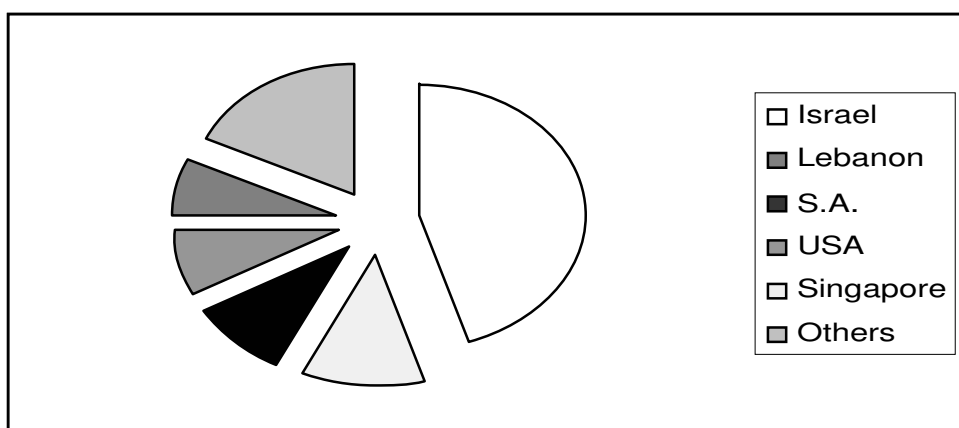
**Figure 1.6. Distribution of Jordan's Imports (2000)**



*Source: JMOP 2003*

Figure (1.7) presents the distribution of the Jordanian exports. Jordan exports almost 15-20% of its total marble production; (82%) of these exports are directed to the following five markets: Israel, Lebanon, Saudi Arabia, the USA, and Singapore. It is noticed that the Saudi Arabia and the USA markets are the highest potential markets for the Jordanian high value added products (JMOP 2003). The USA imports of the different Jordanian marble products increased by (42%) during (1999-2002). However, Turkey and Israel are the leaders in the region in exporting marble to the US market (JMOP 2003).

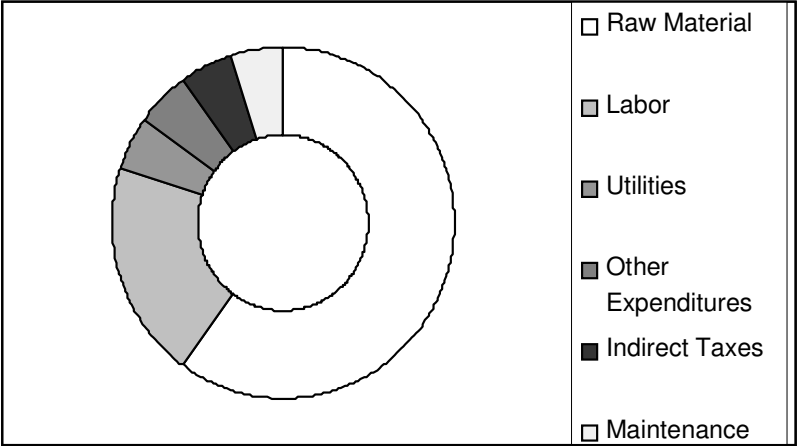
**Figure 1.7. Distribution of Jordanian Exports (area)**



*Source: JMOP 2003*

The raw material constitutes almost of (66%) of the final product’s total cost structure in Jordan (JMOP 2003) as shown in figure (1.8). The high cost of the raw material is mainly due to the high demand on quarries that leads to the increase in the prices of lands in Jordan. Furthermore, the low level of skilled labor increases inefficiency and thereby increases cost. Additionally, the problems of extending electricity cables forced some producers to have their own generators. Some producers are forced to obtain water in tanks due to water insufficiency. Besides, the old machinery leads to high maintenance costs, and limits the flexibility in the existing processes. Also, the high impurities in local materials, that require product treatment to be undergone, increase the cost of production.

**Figure 1.8. Cost Structure (2000)**



*Source:* JMOP 2003

In Jordan, there are more than 600 firms working in the natural stone field employing around 4200 people. Out of these firms, there are 244 firms<sup>4</sup> (40% of the firms working in the natural stone sector) working in processing the natural stone sector and employing around 2135 workers (50% of the people who are working in the natural stone sector in

<sup>4</sup> The percent of the SMEs working in processing the natural stone sector represents 1% of the SMEs working in Jordan

Jordan). As shown in table (1.1) the industry is dominated by small-sized enterprises that constitute 92% of the sector, employing about (52%) of the total industry workforce (JMOIT 2005).

**Table 1.1. Structure of Marble Manufacturers – Jordan**

	<b>Small Scale</b>	<b>Medium Scale</b>	<b>Large Scale</b>
Number of firms	225	15	4
Number of employees	1115	670	350
Investment scale	Less than \$352,000	(\$352,000 – \$1,400,000)	More than \$1,400,000

*Source:* JMOIT 2005

As a conclusion, the abovementioned data shows that there is a big opportunity that the stone industry can assist in building the economy of the Hashemite Kingdom of Jordan as it did in ancient Jordan.

## **1.2. Competitive Advantage as a Conceptual Framework**

Competitiveness, as explained by Porter (1990), can be defined at three levels: firm, industry and nation. Measures of the competitiveness at the firm level include firm's profitability, firm's exports, and market share (JMOP 2003). Measures of the competitiveness at the industry level include the firms' profitability, the industry's trade balance, and the balance of outbound and inbound foreign direct investment (JMOP 2003). While at the national level, competitiveness means the citizens' ability to achieve a high and constantly rising standard of living. A high and rising standard of living for all nationals can be sustained by the continuous improvement of productivity (Porter 1990).

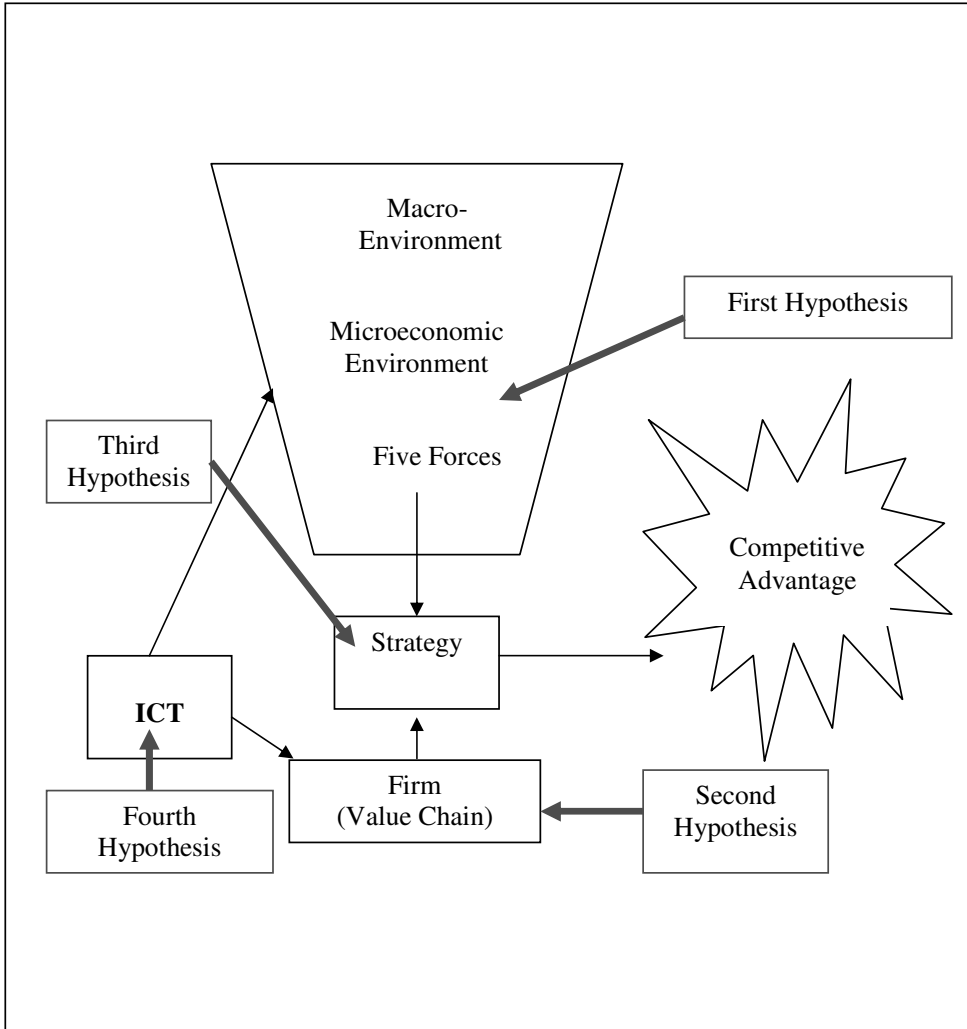
This research discusses the competitiveness of the firms that are working in processing the natural stone sector in Jordan for two reasons. First, the researcher believes that the competitiveness at the firm's level is the cornerstone of the competitiveness at the industry and national levels. Second, the researcher did not find sufficient data at the industry or national level in Jordan. Quarries are not included in the study since most of them are randomly located and not officially registered.

In his book "The Competitive Advantage of Nations", Porter (1990) developed the diamond model. Porter discusses four elements in this model: factor conditions, demand conditions, related and supporting industries, and firm's strategy, structure and rivalry. As well, Porter's five forces model (1979) and Porter's value and supply chains are still used for the analysis of industry and firm and in order to measure the competitiveness at the firm's level, the concept of the Balanced Scored Card (Kaplan and Norton 1992) is used. The four measures of the Balanced Scored Card are: financial performance, customer's satisfaction, internal business, and ability to innovate.

By the emergence of the new economy, the impact of information and communications technology (ICT) can not be disregarded. That is why the impact of the ICT on the level of competitiveness by analyzing the impact of the ICT on different competitive elements such as time, cost, and flexibility. Figure (1.9) presents the framework of the competitive advantage that is used in this study. It consists of macroenvironment context,

microeconomic context (Porter's diamond), Porter's five forces, value chain, strategy, competitive advantage, and the ICT.

**Figure 1.9. Competitive Advantage as a Conceptual Framework**



### ***Macro environment Context***

Environmental scanning and analysis are necessary that a firm can respond to environmental changes and acts on social, economic, legal, political and ethical constraints on its activities as follows:

- √ Social factors that must be understood include buyer behavior characteristics such as access to the Internet and perceptions about it as a purchasing tool.
- √ Ethical issues include the need to safeguard consumer privacy and security of details. Privacy issues include collection and dissemination of customer information, cookies, and the use of direct e-mail.
- √ Legal factors to be considered by e-commerce managers include domain name registration, copyright and data protection.
- √ Political factors involve the role of governments in promoting the ICT.
- √ Economic factors involve the regional differences in the use of the ICT for trade.

Porter (1990) argues that macroenvironment are necessary for productivity and productivity growth but not sufficient. The long-term determinants of productivity are rooted in the microeconomic conditions such as human capital, research and development, and physical infrastructure. The focus of this study is on the microeconomic conditions.

### ***Porter's Diamond***

In his diamond (1990), Porter stresses that competitiveness involves more than just macroeconomic issues such as deficit, interest rate, and political stability. While macroeconomic issues are necessary though not sufficient, the long-term determinants of productivity are rooted in the microeconomic conditions in the economy such as human capital, research and development capacity, physical infrastructure, and innovation capacity. The determinants of the national competitive advantage are grouped in four categories (Porter 1990). The categories are factor conditions, demand conditions, related and supporting industries, and firm's strategy, structure and rivalry.

Porter (1990) shows that nations gain competitive advantage in industries where the demanding buyers put pressure on companies to innovate in order to achieve competitive advantage. A nation's success depends largely on the types of education its people choose and the type of work. Moreover, the presence of domestic rivalry is an essential incentive for the creation and the sustainability of competitive advantage. The related and supporting industries provide close working relationships whereby suppliers and users are located in proximity of each other that take an advantage of short lines of communication, quick and constant flow of information, and ongoing exchange of ideas and innovations. However, clusters are becoming increasingly popular as a policy tool for competitiveness. Porter (1990) defines clusters as "geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition."

Moreover, the factor conditions refer to the nation's circumstances in the factors of production, such as skilled labor, land, natural resources, infrastructure, and capital necessary to compete within a given industry. These factors can be classified into basic factors and advanced factors, and as generalized and specialized factors. However, the role of governments in the competitive development of an industry is an important but indirect one, mainly through influencing the four major determinants of the competitive advantage.

### ***Porter's Five Forces***

Porter (1979, 1980, 1985) explains the existence of the above-normal profit as an indicator of the firm's competitive advantage. His starting point was the "Structure-Conduct-Performance (SCP)" paradigm (Van Gils 2000). In this paradigm, the industry-structure determines the firm's conduct (e.g. pricing, advertising), which in turn determines the economic performance. Porter interpreted this line of thought by substituting conduct with strategy, and argued that the firm performance is dependent on the industry structure. Porter (1985) explains that the industry structure is relatively stable, but can change over the time as an industry evolves and the strength of the five competitive forces varies from one industry to another. The five forces determine the

industry profitability because they influence the price, cost, and the required investment of the firms in an industry. These competitive forces are the entry of new competitors, the threat of substitutes, the bargaining power of buyers, the bargaining power of suppliers, and the rivalry among the existing competitors (Porter 1979).

### ***Generic Strategies***

Porter (1979, 1980) determines three generic strategies firms can possess: the cost leadership, differentiation and focus. Sources of cost advantage, likely to be rare, include learning-curve economies, differential low-cost access to factors of production, and technology. Firms can differentiate their products in different ways: product features, linkages between functions, timing, location, product mix, links with other firms, product customization, product complexity, consumer marketing, distribution channels, service and support, and reputation. Firms focus on a particular market niche, and company resources are devoted to maintain market leadership in that niche.

The extent of the ICT threats will be dependent on the particular market a firm operates in. Generally the threats seem to be greatest for firms currently sell through retail distributors and have products that can be readily delivered to customers across the Internet or via parcel courier (Chaffey 2002).

### ***Value Chain***

The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production, delivery to final consumer, and final disposal after use (Porter 1985). Competitive advantage grows out of the way as firms organize and perform discrete activities. The performed activities, when competing within a particular industry, can be grouped into categories, as these activities can be divided broadly into primary activities and support activities. Primary activities are those involved in the ongoing production, marketing, delivery, and servicing of the product whereas support activities are those that provide purchased inputs, technology, human resources or the overall infrastructure functions supporting the other activities (Porter 1985).

Some of the strengths of value chain analysis are:

- √ Benchmarking the strengths and weaknesses of the SMEs.
- √ Highlighting the systemic interconnectedness of individual enterprises and linking in the chain. The SMEs can be interconnected in two main ways, either horizontally (with other SMEs, producing similar products) or vertically in value chains.
- √ Throwing light on the manner in which producers are connected to global markets. This is particularly the problem for the SMEs, since by their size, they are required to sell through intermediaries.

The SMEs in developing countries often find themselves in a double bind through participating in global value chains. These SMEs suffer from a real technology deficit in the broad sense. Developing economy SMEs often simply do not have access to the necessary resources, equipment, materials and professional management skills. Thus, the impact of globalization on the SMEs in developing countries is thus ambiguous. It opens up opportunities to benefit from integrating into global value chains. On the other hand, it raises the barriers to entry into the global value chains.

The ICT enables value networks to be created that enable the value chain to be dynamically updated in response to marketplace variables. As well, the value chain can be revised by disaggregation or re-aggregation. Disaggregation may involve outsourcing inside activities to external parties.

### ***Balanced Scored Card***

In this study, the Balanced Scored Card technique (Kaplan and Norton 1992) has been used to measure the competitiveness of the firms working in processing the natural stone industry. Kaplan and Norton (1992) explain that the traditional financial measures should be supplemented with operational measures concerning customer satisfaction, internal processes and the ability to innovate. These three measures would assure future financial results, and drive the organization towards its strategic goals while keeping all four perspectives in balance. Each measure has an impact on other measures (Funk 2003).

Financial performance indicators are always lagging indicators. Some of these indicators are return on investment, profitability, revenue growth, cost reduction and exportation. The customer perspectives typically include several common outcomes measures. These are customer satisfaction, customer retention, customer acquisition and market share in targeted segments. Beyond just retaining customers, many companies wish to measure the customer's loyalty by the growth of business with those customers. The internal process perspective is unique for reach organization. It measures employees' satisfaction, employees' keep on and employees' productivity. The innovation perspective includes percentage of new products of total turnover and time necessary to develop new generation of products (Kaplan and Norton 1992).

### ***Information and Communications Technologies (ICT)***

The ICT provides opportunities for firms of all sizes to innovate, increase efficiency and gain access to new market at home and abroad. Governments should foster appropriate business environment for the ICT uptake and target programs to overcome market failures. Policies that affect the adoption and use of the ICT include those designed to expand and improve the quality of network infrastructure and legal and regulatory environment, foster technological diffusion and create a favorable business environment. In addition to the ICT awareness programs, business consultation and training services to enhance the ICT and managerial skills. However, there is no one-size fits all approach and policies depend on national circumstances.

Small and Medium Sized Enterprises (SMEs) in developing countries need to be able to figure out how, when, and where to use the ICT techniques to reap the above gains. There are many obstacles of using the ICT in the developing countries. Some of these obstacles are: higher costs to access the Internet, language barrier, and the lack of understanding of e-commerce techniques and the technology needed to use it. Furthermore, the SMEs in the developing countries are facing more challenges when trying to gain from e-commerce than businesses in the developed countries. Some of these challenges are relating to technical infrastructure, laws and regulations, and limited logistics systems (OECD 2000g).

### **1.3. Research Problem, Objective, Questions, Hypotheses, Methodology and Overview of the Dissertation**

This section discusses the research problem, objective, questions, hypotheses, methodology and the overview of the contents of the chapters. Details on the research methodology are presented in chapter three.

#### **1.3.1. Research Problem**

Natural resources are an important source of national wealth around the world. Many of the countries have used their natural resources as a launch pad to accelerate economic development and to increase their competitiveness. However, experience shows that natural riches are neither necessary nor sufficient for economic prosperity and progress. The long-term benefits come not from the presence of natural resources themselves but rather from the value-added products and services developed around them. Alongside, copying or adopting policies that have been effective elsewhere rarely succeed.

However, the emergence of information and communications technologies (ICT) has changed the dynamism of many industries (E-Economy Conference 2001, OECD 2000g). The emergence of the ICT brings opportunities and threats to firms and could lead to dis-intermediate or re-intermediate the whole supply chain and thus changing the cluster opportunities of the sector. The Internet will boost efficiency and enhance market integration domestically and internationally, particularly in developing countries that are most disadvantaged by poor access to information. Although the Internet should enhance global growth, it also brings increased danger to countries that can not access it effectively.

All of the aforementioned analysis will be applied on the small and medium sized enterprises (SMEs), that are working in the natural stone sector in different competitive environments (Italy, Turkey and Jordan) which all are rich with natural stone, have different competitive positions and located in different economic stages.

The Jordanians realize that there are several types of stone similar to those in demand in the world markets. Thus, they started to pay more attention to this industry but still they are in the process of developing their policies at the micro and macro levels taking into consideration that most of the businesses in Jordan are family-owned enterprises<sup>5</sup>. As any other family businesses, they are facing the task of balancing the business issues with family members' interests, failing to optimize their growth opportunities and avoiding debt out of misguided fear or because they resist unwanted accountability (Storey 1994).

Italy, as a super model, is considered the world center of excellence in the natural stone industry. This gave the country the competitive advantage to act as the world center in the international marketing of the stone and marble products and to dominate the industry worldwide. As well, Italy exhibits many of the characteristics of a developing economy: corruption, weak government, relatively poor infrastructure (Porter 1990). Another reason is that many Italian clusters are entrepreneurial and even family-owned where skills are passed on to the next generation of workers.

Turkey as an emerging Mediterranean and non-EU country was selected as another country to look at more closely. Turkey is in the 7th place among the natural stone producers and the 12th among the exporting countries. The growth of the natural stone industry in Turkey almost doubles the (8%) growth of the world natural stone industry (TUMMER 2004). Turkey has a (5%) share in global production a (2%) share in the global market. Turkey, with an important place in terms of the world's marble reserves, has a very high market opportunity with its variety of marble. It has about 400 different color and texture qualities. It is estimated that (40%) of the world's marble reserves are found in Turkey (TUMMER 2004).

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<sup>5</sup> A family business is any business in which a majority of the ownership or control lies within a family, and in which two or more family members are directly involved (Story 1994).

### **1.3.2. Research Objective**

The main objective of the research is to discuss the factors of competitive advantage of the SMEs working in processing the natural stone sector in Jordan and determine the factors that need improvements in order to improve the level of competitiveness of these SMEs. These factors are determined from Porter's diamond (1990), and Porter's five competitive forces (1979, 1980, 1985). Additionally, the research is discussing the impact of the ICT on the competitiveness of these SMEs.

Based on the strengths, weaknesses, opportunities and threats (SWOT) analysis, six conclusions are developed in order to improve the competitive advantage of the SMEs working in the natural stone sector in Jordan. These conclusions are: upgrading and simplifying the laws and regulations, upgrading the advanced and specialized infrastructure, promoting the entrepreneurship and upgrading the personnel, establishing credit institutions to support the SMEs, promoting e-business in the natural stone industry, and building a dynamic natural stone cluster. These conclusions could be realized at three levels: SMEs-level, government-level, and related and supporting industry-level.

As well, a proposed natural stone cluster model (NSCM) is developed. The board of the model is led by the related ministries and authorities in a consensus framework with involved organizations (professional associations, educational-training, technical and financial support organizations and related ministries). It is essential that the management of the natural stone cluster should be independent.

### 1.3.3. Research Questions

Nations can be seen as differing in the stage of competitive development. Each stage involves different industries and industry segments as well as different company strategies. The stages also differ in the appropriate array of government policies toward industry. The process of moving through the stages can take many paths, and there is no single progression.

The natural stone industry in Jordan is located in the factor-driven stage (JMOP 2003). Resting on this stage advantage, then, does not provide a solid foundation for sustained productivity growth or for expanding the range of internationally successful industry. Few nations with truly abundant natural resources have achieved sustained prosperity in this knowledge-based economy. Some of the most telling conditions necessary for a nation to progress to more advanced stages are: factor creation mechanisms, domestic rivalry, demand upgrading, and capacity for new business formation. Thus, the main question of the study is:

*(RQ):* How can the SMEs working in processing the natural stone in Jordan move from the factor-driven stage to the innovation-driven stage?

In order to answer this main question, the study aims to discuss the following sub-questions:

*(RQ1):* How developed are the factor conditions, demand conditions and industry structure in Jordan, in comparison with Turkey and Italy, and what can be done in order to improve them?

*(RQ2):* How efficient is the natural stone cluster in Jordan, in comparison with Turkey and Italy, and what can be done in order to improve it?

(RQ3): How efficient are the rules and regulations for doing a business in Jordan in comparison with Turkey and Italy?

(RQ4): How can the Jordanian SMEs working in processing the natural stone benefit from the ICT in order improve their competitive advantage?

#### **1.3.4. Research Hypotheses**

In view of the aforementioned questions, the research examines the following hypotheses:

In order to maintain competitive advantage, the SMEs that are working in processing the natural stone sector should understand the context of their work. Therefore, there is a need to analyze the industry structure (Porter's five competitive forces) and microeconomic environment (Porter's diamond) in addition to the macro environment (such as deficit, exchange rate...). Due to the fact that the macroenvironment has a total effect on all of the industries it was excluded.

The first hypothesis testifies the competitive factors that are confronting the SMEs working in processing the natural stone sector in Jordan, Turkey and Italy. These competitive factors are determined by the five competitive forces, factor conditions, demand conditions, and related and supporting industries. By understanding these competitive factors, the researcher shall be able to analyze the business environment and compare the status of each competitive factor in Jordan in comparison with Turkey and Italy in order to identify the factors that need improvements. The Kruskal-Wallis test was used to testify this hypothesis (please see appendix F-2).

*The null hypothesis (  $H_0$  ):*

There are no significant differences in the competitive factors confronting the SMEs working in processing the natural stone sector between Jordan, Turkey and Italy.

The second hypothesis discusses the legal form of the SMEs working in the natural stone sector in Jordan. The statistics drawn from the chambers of commerce and the Ministry of Industry and Trade, show that there are a limited number of companies in Jordan (Owners of the firms prefer to work individually or in partnership rather than to register as a company). The literature shows that the family ties and individual relationship preferences might be the reason. This hypothesis testifies whether the individual relationship preferences are the reason behind that or not. The one-way analysis of variance was used to testify this hypothesis (please see appendix F-1).

*The null hypothesis (  $H_0$  ):*

Jordanians are not creating companies in the natural stone sector because of the individual relationship preferences.

(  $H_0$  ):  $\mu_1 = \mu_2 = \dots = \mu_9$

Where  $\mu$  is the mean of the individual relationship preferences.

The third hypothesis testifies whether there is a significant difference on the impact of the generic strategies on the competitive advantage of the SMEs or not. The Kruskal-Wallis test was used to testify this hypothesis (please see appendix F-2).

*The null hypothesis (  $H_0$  ):*

There are no significant differences in the influence of the different scenarios of the generic strategies on the competitive advantage of the SMEs working in processing the natural stone sector in Jordan, Turkey and Italy.

The ICT may have a positive or a negative impact on the performance of the firms and business environment. The fourth hypothesis testifies whether or not there is any significant difference on the impact of the ICT on different competitive elements such as delivery time, cost, innovation, and flexibility between Jordan, Turkey and Italy. The Kruskal-Wallis test was used to testify this hypothesis (please see appendix F-2).

*The null hypothesis (  $H_0$  ):*

There are no significant differences on the impact of the ICT on the competitive elements of the SMEs working in processing the natural stone sector between Jordan, Turkey and Italy.

### **1.3.5. Research Methodology**

An academic and business literature and other appropriate literature sources search were conducted. As part of the work, books, journal articles, tertiary literature such as indexes and catalogues, company minutes, government surveys, CD-ROM in university libraries, Internet sites, chambers of commerce surveys and professional association surveys have been used. A combination of quantitative and qualitative methods is used in the research. Employing both qualitative and quantitative data offers an opportunity not only to test the hypotheses but also to probe deeply into the issues raised by the research questions.

Although questionnaires may be used as the only data collection method, it is usually better to link them with other methods in a multi-method approach (Saunders et al. 2000).

The area random sampling is used. The population has been divided into three strata based on the geographical distribution. A random sample is then drawn from each of the strata. The total population is the sum of all the SMEs working in processing the natural stone sector in Jordan, Turkey and Italy. The total number is 2864 firms; 240 firms in Jordan, 784 firms in Turkey and around 1840 firms in Italy. The total sample size is 652 SMEs; 140 firms from Jordan, 213 firms from Turkey and 299 firms from Italy.

The purpose of the survey is descriptive-exploratory with some explanatory analysis. Surveys are frequently conducted for the purpose of making descriptive assertions about the population that is discovering the distribution of certain traits or attributes (Babbie 1990). The questionnaire was developed in four languages: English, Arabic, Turkish and Italian. Hence, a careful translation method was used. The questionnaire consists of four parts. Part one covers the different elements of Porter's diamond and Porter's five forces. Part two covers the different scenarios of the generic strategies. Part three covers the e-business side and part four cover the SMEs' profile. The scale items were tested on the reliability and validity of the final test to examine the consistency of the constructs and related the items.

A pre-test study of 5 firms from Jordan in conformity with the present criteria for small and medium sized enterprises was conducted. The purpose of the pre-test was to refine the questionnaire so that respondents have no problems in answering the questions and there are no problems in reporting and recording the data (Saunders et al. 2000; Babbie 1990). In addition, it enabled the researcher to obtain some assessment of the question's validity<sup>6</sup> of the data that has been collected. The non-parametric Kruskal-Wallis Test<sup>7</sup> was used to testify the first and fourth hypotheses while the one-way ANOVA<sup>8</sup> was used

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<sup>6</sup> Validity is the extent to which a question or scale is measuring the concept, or property it says it is (Saunders et al. 2000).

<sup>7</sup> The Kruskal-Wallis Test is the non-parametric alternative to a one-way analysis of variance. It is used to testify the significant differences between the three countries.

<sup>8</sup> ANOVA is a contraction of Analysis Variance. It is a method for comparing the means of more than two populations.

to testify the second and third hypotheses. In addition, the non-parametric Mann-Whiney Test<sup>9</sup> was used in order to testify the significant differences between Jordan and Turkey and to testify the significant differences between the first survey (2003) and second survey (2006) in Jordan.

The interviewees were asked about the Balanced Scored Card (innovation, customer's satisfaction, internal business and financial performance) of their firms as an indication of their competitiveness (Kaplan and Norton 1992). It was measured on a five-point scale (very negative to very positive). The respondents were asked about the generic strategies (cost leadership, differentiation and focus). These generic strategies were adopted from Porter's work (1979, 1980, 1985). The respondents were asked to select the type of generic strategy that is most closely to their firms. Also, the respondents were asked whether they use the computer and the Internet and the purposes of using the Internet on a yes / no basis. The expected benefits of using the Internet was measured on a five-point scale<sup>10</sup> where 1= less important and 5= more important. Furthermore, the respondents were asked to evaluate the different elements of Porter's diamond (1990) and Porter's five forces (1985). These elements were also measured on a five-point scale (1 = very negative and 5 = very positive).

In the semi-structured interviews, a list of themes and questions has been covered. Face-to-face one-hour to two-hour meeting with the interviewee was carried out. The researcher personally administered all the interviews and the data was covered by note taking. A list with all of the ministries, authorities and companies that have been interviewed is presented in chapter three.

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<sup>9</sup> The Mann-Whiney Test is the non-parametric alternative to t-test. It is used to testify the significant difference between Jordan and Turkey, and also between the first and the second survey in Jordan.

<sup>10</sup> Often the scale is used as a semantic differential. Five-point Likert scales are perhaps most commonly used but may cause problems due to lack of statistical normality conditions.

### **1.3.6. Overview of the Dissertation**

The dissertation consists of seven chapters. Chapter one presents the introductory part of the research where the past and current status of the natural stone in Jordan is presented. Jordan has a unique historical architectural heritage. The rose-red city of Petra, Philadelphia and Jerash are the most impressive historical objects of ancient Jordan. The question rises: whether the natural stone industry can assist in building the economy in the Hashemite Kingdom of Jordan as it did in ancient Jordan or not?. In addition, the research problem, objective, questions, hypotheses and methodology are described.

Chapter two presents the literature review of different competitive models for the SMEs, and the challenges of using the ICT by these firms. From an entrepreneurial perspective, a competitive firm needs to survive in the market, at present and tomorrow, and to achieve market share and profitability. In this study the concept of Porter's diamond, the forces and the Balanced Score Card (BSC) have been used. The BSC, as an indicator of the firm's competitive advantage, has four perspectives: financial, customer's satisfaction, internal business, and innovation.

The literature review shows that the SMEs tend to move into the electronic business in stages: using the Internet as a tool for communicating and obtaining information, buying and selling, and conducting banking and financial transactions. On the other hand, the reasons for the relatively low level of Internet usage are: low level of technological expertise, uncertainty about benefits, low commitment of owner/manager, poor understanding of the dynamics of the electronic marketplace. In addition to that, the fear of too low use of the e-commerce by customers and suppliers with the uncertainty about the legal, regulatory and tax environment play as major obstacles of using the Internet by the SMEs.

Chapter three discusses the economic background, information and communications technology sector, natural stone sector and the SMEs in Italy, Turkey and Jordan. In Jordan, the government has liberalized the trade regime sufficiently to secure Jordan's membership in the WTO (2000); a free trade accord with the US was signed in (2000),

and held an association agreement with the EU (2001). Turkey has a strong and rapidly growing private sector, yet the state still plays a major role in the basic industry, banking, transport, and communication. In recent years the economic situation has been marked by erratic economic growth and serious imbalances. In Italy, the capitalistic economy remains divided into a developed industrial north, dominated by private companies, and a less developed, welfare-dependent agricultural south.

Chapter four discusses the research methodology in detail where both the quantitative and qualitative strategies have been used. A pre-test was conducted in order to test validity of the developed constructs. After revising the questionnaire, data was collected in Jordan, Turkey and Italy for the analysis of the given hypotheses. The questionnaire was developed in four languages: English, Arabic, Turkish and Italian. In addition to the survey method, semi-structured interviews were conducted with ten SMEs working in the natural stone in Jordan and other related and supporting organizations and ministries in Jordan, Turkey and Italy.

Chapter five presents the empirical research study and discusses the research hypotheses. The data shows that there are significant differences in the competitive forces confronting the SMEs working in the natural stone industry between Jordan, Turkey and Italy. Furthermore, the analysis of data shows that the individual relationship preferences are not the reason of not creating companies by these SMEs. Other reasons such as starting and closing a business, enforcing contracts, protecting investors, getting credit, registering property, and hiring and firing workers should be taken into considerations. Additionally, the analysis of the data shows that the e-commerce has a limited influence on the natural stone industry and there are significant differences in the impact of the ICT on the competitive elements between the three countries.

As well this chapter discusses strengths, weaknesses, opportunities and threats (SWOT) of the SMEs working in processing the natural stone in Jordan. Based on the (SWOT) analysis, six policy options are developed: updating and simplifying the laws and regulations, upgrading the advanced and specialized infrastructure, promoting the entrepreneurship and upgrading personnel, establishing credit institutions to support the

SMEs, promoting e-business in the natural stone sector, and building a dynamic natural stone cluster. These policy options could be realized at three levels: the SMEs-level, government-level, and related and supporting industry-level.

Finally, chapter six shows the main results of the study and summarizes the recommended policies that have been developed to be achieved at the SME-level, cluster-level and government-level. Also, it discusses the limitations and obstacles of the study and the recommendations for future research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

This chapter covers the theoretical background of the main areas of the research. Section 2.1 discusses the theory of competitive advantage, while section 2.2 presents the different categorizations of small and medium sized enterprises (SMEs). Section 2.3 discusses the role of Information and Communications Technology (ICT) on the SMEs' competitive advantage. A summary of the literature review is presented in section 2.4.

#### **2.1. Competitive Advantage**

Although there are many economists who used the concept of competitive advantage before Porter, Porter's work<sup>11</sup> (1979, 1980, 1985, and 1990) is still the starting point for any discussion of competitive advantage (Jones 2003). Straub and Klein (2001) and Barney (2002) argue that the term of competitive advantage did not appear in Porter's work until the year 1985, whereas Caves (1984), Day (1984), Spence (1984) and Barney (1986) used the term around the same times as Porter while Penrose (1959) and Ansoff (1965) used the concept of competitive advantage before that time.

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<sup>11</sup> M. Porter is a specialist in industrial economics and business strategy and he is a professor of Business Administration at the Harvard Business School.

### **2.1.1. Definitions of Competitive Advantage**

Competitiveness of a firm is its capacity to achieve its targets. These targets are likely to be expressed in a variety of terms depending on the context (Barney 2002). Within a macroeconomic perspective, a competitive firm develops and sustains a level of performance that contributes to the Gross Domestic Product (GDP), employment opportunities, and the wealth of the people. From an entrepreneurial perspective, a competitive firm needs to survive in the market and to achieve market share and profitability. The success of a competitive firm can be measured by both objective and subjective criteria. Objective criteria include return on investment, market share, profit and sales revenue, while subjective criteria include enhanced reputation with customers, suppliers, and competitors, and improve quality of delivered services (Barney 2002).

Barney (2002) discusses four approaches to measure the firm's competitiveness. These measurements are firm's survival, stakeholder approach, simple accounting measures, and adjusted accounting measures. Feurer and Chaharbaghi (1994) measure competitiveness quantitatively by profit, ability to raise capital and cash flow in terms of liquidity status. Soliman (1998) adds cost, quality, delivery dependability, flexibility and innovation as factors formulating such a competitive position. M. Porter (1985) indicates that a firm experiences a competitive advantage when "its actions in an industry create economic value and when few competing firms are engaging in similar actions." De Wit and Meyer (1999), Buffam (2000), and Christensen (2001) indicate that a firm has a competitive advantage when it has the means to edge out rivals when competing for the favor of customers.

Barney (2002) explains that a firm experiences a competitive parity when the firm's action creates economic value applied in several other firms engaging in a similar action. An important goal of a business enterprise is to optimize shareholders returns. However, optimizing short-term profitability does not necessarily ensure optimal shareholders returns since shareholder value represents the net present value of expected future earnings. One of the techniques that reflect the shareholders return is the concept of the Balanced Score Card (BSC) as an indicator for the firm's competitive advantage.

Resource-based theories of strategy have become increasingly influential in the recent years and most writers take their inspiration from the work of Penrose (Foss 1997; Rangone 1999). Whereas Porter (1980) intended to see the competitiveness of the firm as a result of its market position, resource-based theorists do claim that if firms within an industry are doing well, the reason for this is their core competencies. Core competencies are the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies as explained by Prahalad and Hamel (1990).

Prahalad and Hamel (1990) focus on the resources, capabilities and competences of the organization as the source of competitive advantage rather than the environment, as in the traditional approach. Edith Penrose, in her work 'The Theory of the Growth of the Firm' (1959) is often credited with the idea of the resource-based view. Also the work of Philip Selznick (1957) stressed the role of distinctive competences and Alfred Chandler (1962) demonstrated the importance of organizational structure in the utilization of a firm's resources. Wernerfelt (1984), and Rumelt (1997) adopt the resource-based view. Senge (1990) and Argyris (1994) stress the acquisition of competences through internal mechanisms of individual and collective learning, while Hamel and Prahalad emphasize strategic tools like alliances, licensing, mergers and acquisitions.

A study of the SMEs in the Netherlands adopted a resource-based approach to identify the source of competitive advantage in a sample of 63 firms representing manufacturing and service sectors (Tilley and Tonge 2003). According to this study, "front runners" were distinguished from "back members" by the way in which they combined three sets of competencies: market, technological and organizational. Wickham (2001) also apply the resource-based theory in their analysis of competitive advantage in entrepreneurial firms.

The resource-based theory becomes more and more subject of critique under the pressure of globalization. Some of these critiques are:

- ✓ The most important problem to the resource-based view is the lack of a clear and coherent treatment of dynamics; it does not theorize the mechanisms underlying the creation of new resources (Barney 2002).
- ✓ The theory may be criticized for being tautological. This approach is one-sided and thus in danger of neglecting the environment which is still critical to the organizations' survival (Van Gils 2000).
- ✓ The application of the resource-based approach to the strategic management of the small firms has been limited. Rangone (1999) argues that the application of the resource-based approach to small firms has to take account of small-firm characteristics.

Using the value chain as the conceptual framework, Bretherton and Chaston (2005) show how small and medium-sized wineries use their resources and how they access other resources by using strategic alliances. The wineries have engaged in strategic alliances, rather than structural ties, at various stages of the value chain, to gain access to scarce resources and capabilities. There is clear evidence that the over-performers have had access to adequate resources, which has led to sustainable competitive advantage and superior performance.

### **2.1.2. Balanced Scored Card**

In the past, the financial aspects were not usually left out. In addition to that, traditional performance measurement is focused on short-term goals. Long term aspects such as employee's attitude are neglected or seen as optional or informal. Focusing solely on financial performance measures does not only lead to a limited, narrow perspective which leads to an unbalanced assessment of the current business, but it also restricts the power of continuous improvement, since the non-financial aspects are the drivers of the future performance.

R. Kaplan and D. Norton (1992) have developed the method of the Balanced Scored Card. They explained that the traditional financial measures should be supplemented with

operational measures concerning the customer's satisfaction, internal processes and the ability to innovate. These three measures would assure future financial results, and drive the organization towards its strategic goals while keeping all four perspectives in balance. Each measure has an impact on other measures. When managers understand the linkages between the four perspectives they realize how advances in one can lead to lower performance in another measure. Firms that actively manage and respond to a wide range of sustainability indicators are better able to create value for all stakeholders over the long term (Funk 2003). The four perspectives of the BSC are:

### ***Financial Perspective***

The performance measures in the financial perspective provide an answer to the question: How attractive is the organization for shareholders and other providers of capital (Kaplan and Norton 1992). It could be measured by different financial performance indicators such as profit and return on investment. In addition, the financial perspective can include newer financial performance indicators. As well, the reliability of cash flow and profit predictions can be useful to investors who intend to minimize their risk of return.

### ***Customer Perspective***

The customer perspective focuses on the question: How do customers perceive the organization (Kaplan and Norton 1992). It could be measured by different performance indicators such as time, quality, and service.

### ***Internal Business perspective***

The internal business perspective contains measures that relate to the question: What organizational processes result in competitive advantage (Kaplan and Norton 1992). It could be measured by different performance indicators such as cycle time, waste levels, costs of certain activities, delivery speed and reliability, employees' productivity, and employees' loyalty.

## ***Innovation and Learning Perspective***

The innovation and learning perspective is concerned with the continuation of the organizational success over time which consists of measures that relate to the question: Can the organization continue to improve and create value (Kaplan and Norton 1992). It could be measured by different performance indicators such as revenue from new products as a percentage of total revenue, the extent to which planned introductions of new products are realized, and number of improvements suggestions by employees.

### **2.1.3. Porter's Diamond**

Porter (1990) identifies four stages of national industrial development: the factor-driven stage<sup>12</sup>, the investment-driven stage<sup>13</sup>, the innovation-driven stage<sup>14</sup>, and lastly the wealth-driven stage. He argues that the correct policy for industry and government depends on the nation's developmental stage. As well, Porter (1990) provides a useful concept that can help firms to explore improvements for productivity. The key principles of the competitiveness paradigm can be summarized as follows:

- ✓ Firms need a healthy home base to assist them in developing and sustaining the capacity to innovate. But firms, not nations, are on the leading edge of international competition
- ✓ Competitive advantage results from an effective combination of appropriate firms' strategies and its environment.
- ✓ Competitive advantage is sustained through continuous innovation and upgrading of the productive capacities of the firms.

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<sup>12</sup>Factor-driven stage is characterized either by natural-resource-based activities (primary extraction) or by labor-intensive manufacturing.

<sup>13</sup>Investment-driven stage is associated with the manufacturing of intermediate and capital goods and infrastructural building.

<sup>14</sup>Innovation-driven stage arrives when a country is human-capital abundant and active in research and development.

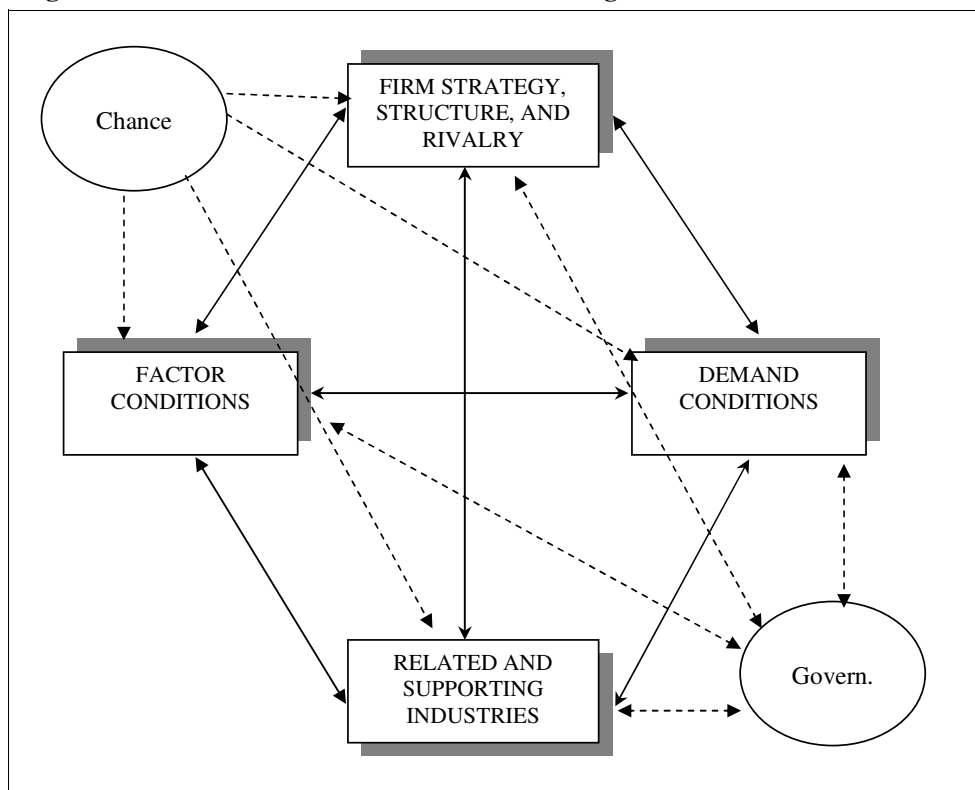
However, Porter's theory of national competitive advantage (1990) becomes more and more subject of critique under the impression of the digitalization, globalization and deregulation. All of these critiques are acceptable. Some of these critiques are:

- ✓ Although Porter makes a contribution to the theory of international trade and strategic management, none of the four determinants offered by Porter is new (Barney 2002). It means that Porter's work lacks the originality.
- ✓ The lack of formal analytic modeling (Oz 1999). It means that the diamond is an explanatory framework rather than a deterministic theory. Porter has gained all his information from case studies of different industries in different nations. He does not offer any empirical or statistical evidence to support his theories. Although this criticism is mainly true, it should be stated that by using such a qualitative framework, Porter introduces several interesting points like the advanced and specific factor creation mechanisms and sophistication of demand conditions, which would have been very difficult to capture if he had just focused on quantitative method and formal modeling.
- ✓ In his model of five forces (1979), Porter states that high local rivalry is a threat. His diamond (1990) states the opposites: intensive rivalry motivates companies to innovate.
- ✓ Porter focuses on intensive local rivalry and might underestimate the influence of international rivalry. Foreign-owned multinational enterprises have been excluded in Porter's model unless they become part of the host country diamond (O'Malley and Van Egeraat 2000).
- ✓ Porter's model is not always convincing that it can bring really advantages for a firm in the future. As well, it is doubtful whether this general model can really be used as a tool to examine any country without further specifications.
- ✓ Porter's ideas became more subject of critique under the impact of the ICT.
- ✓ Porter's single national model needs to be reformulated as a double diamond or multiple diamond model for the purpose of application to smaller peripheral economies (O'Malley and Van Egeraat 2000).

- ✓ Porter is criticized about his treatment of macroeconomic policy. He underestimates price competitiveness and plays down macroeconomic policies that affect the relative costs of producing similar products in different countries. According to him, macroeconomic factors like the value of currency and interest rates play a role by affecting the export performance in the short run and not preferable and sustainable sources of competitive advantage in the long run.
- ✓ Porter pays very little attention to the national culture on the competitive advantage of a country. According to him, the influence of culture on competitive advantage is an indirect one since it acts through the determinants, rather than on its own.
- ✓ It is questionable whether the variables of the determinant "firm strategy, structure and rivalry" can form a coherent group or if they are just a rest of category.
- ✓ According to Porter, domestic demand conditions of an industry are amongst the important determinants of the international competitiveness of this industry. The relationship between international competitiveness and the size of home demand is one of the issues that is open to dispute since there are two conflicting arguments concerning this relationship. According to the first argument, if home demand is large, firms may feel secure to invest in industries where there are economies of scale, and given that there is intensive domestic rivalry and local buyers parallel foreign demand, this may encourage international competitiveness. According to the second one, however, if home market is large enough, firms may not bother trying to export and may prefer to concentrate solely on the home market.

The determinants of the national competitive advantage are grouped in four categories (figure 2.1). The categories are factor conditions, demand conditions, related and supporting industries, and firm strategy, structure and rivalry (1990).

**Figure 2.1 The Determinants of National Advantage**



*Source:* Porter 1990

After analyzing the competitive industries, Porter extends his theory to the national economy as a whole. Porter thinks that it is possible to classify the economic development process into four broad stages: the factor-driven, investment-driven, innovation-driven and wealth-driven stages. In the factor-driven stage, the competitive advantage of industries emerges from basic and generalized factors of production such as an abundant natural resources and low cost labor. In the investment-driven stage, willingness and ability to invest is the key for competitive advantage. The investments concentrate on new production facilities and on factor creation mechanisms. At this stage, advantages are no longer entirely dependent on factor conditions. Although, to a limited extent, home demand as well as firm strategy, structure and rivalry also play a role, whereas the related and supporting industries are still largely undeveloped.

In the investment-driven stage, clusters of competitive industries deepen both vertically and horizontally and services in the competitiveness of a nation become more important. In contrast to aforementioned stages, the wealth-driven stage signals a decline. The economy is mainly driven by past success and wealth, innovation and sustaining competitive advantage lose their importance.

#### **2.1.4. From Diamond to Clusters**

The goal of the economic development is to achieve prosperity for all citizens. Productivity and productivity growth determine the economic growth. Whereas, innovation is a key driver of productivity growth, and clustering supports both productivity and innovation (Porter 1990). Once a cluster<sup>15</sup> is formed, the whole group of industries becomes mutually supportive. Thus, clusters can affect competition by increasing the companies' productivity, deriving the direction and pace of innovation (Porter 1998). Furthermore, being part of a cluster allows companies to operate more productively in sourcing inputs, accessing information, technology and needed institutions, coordinated with related companies, and motivating improvement (Fisher and Rueber 2000).

Porter (1998b) makes a convincing case drawing on lessons from experience “ . . . government, working with the private sector, should reinforce and build on established and emerging clusters rather than attempt to create entirely new ones. New industries and new clusters emerge best from established ones”. Clusters are a driving force in increasing exports and attracting foreign investments. For example, Business Network Program in Australia noted that the rate of increase in exports is four times higher in cluster networks than in non-cluster environments (Singh 2001). Singh (2001) discusses some of the common qualitative and quantitative performance measures to determine a cluster's success in creating and sustaining competitive advantage:

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<sup>15</sup> Clusters include an array of linked industries and other entities important to competition and they promote both competition and cooperation (Porter 1998).

- ✓ The presence of upstream and downstream industries
- ✓ The level of competitive inputs such as services, machinery and equipment
- ✓ The level of employment in all business activities related to the cluster
- ✓ The rate of increase in value-added products and services
- ✓ The rate of increase in exports of value-added goods and services
- ✓ Inter-firm cooperation and the quality of the linkages and interactions
- ✓ New start-ups

Porter (1998b) presents different examples related to the natural resource-based clusters. Some of these examples are: mining equipment and services in Finland, ceramic tile services and equipment in Northern Italy, drilling equipment in Kimberly, Australia, machinery and equipment related to dairy and livestock in Denmark, the Netherlands and the United States, and transport and logistics management in the Netherlands related to the flower cluster.

The development of natural resources laid the foundation for subsequent infrastructure, i.e., railways, electric power, highways, ports, etc. In the new economy, competitive advantage can be created around natural resources and clustering provides the methodology to accomplish this. It will be demonstrated that many of today's less developed countries have generated the enhanced productivity out of their rich natural resource base. These countries have used their natural resource industries as a springboard to accelerate economic development and to expand their economic base.

On the other hand, the accounting for the actual value of natural resources shows that net savings per person are negative in the world's most poor countries (Sachs and Warner 2001). Furthermore, current indicators used to guide development decisions ignore depletion of resources and damage to the environment. Among developing countries, natural resources are relatively more prevalent. But there are examples of countries that are genuinely rich in terms of natural resources but still have not been able to sustain economic growth. Many resource-rich developing countries have experimented with oil funds or stabilization programs-with disappointed results.

### **2.1.5. Porter's Five Forces Model**

One of the basic areas of concern in industrial economics is the interaction between firm and the characteristics of the market forces. Economists, belonging to this school of thought, perceive the significance of the link between environment and strategies employed by the firm. They use the structure–conduct–performance diagram. Such a paradigm assumes basic conditions of supply (input, technology, etc.) and demand (growth of demand, price elasticity, etc...). Market structure is then put into perspective in terms of number of market players (buyers and sellers), barriers to entry, cost structure and product differentiation in relation to conduct that is illustrated in the pricing, product strategy, research and innovation (Porter 1985). The interaction would follow through and lead to the enterprise's performance represented by its production efficiency, employment of resources and degree of progress. In this respect, the market structure comprises the environment within which the firm operates. Within such a paradigm, market structure, strategy and performance would comprise the variables that influence the firm's competitiveness (Kazem 2004).

Porter (1980) attempts to explain the existence of the above-normal profits, as an expression of the firm's market power, and his starting point was the "Structure-Conduct-Performance (SCP)" paradigm (Van Gils 2000). In this paradigm, the industry-structure determines the firm conduct (e.g. pricing, advertising), which in turn determines the economic performance. Porter (1980) interpreted this line of thought by substituting conduct with strategy, and arguing that the firm performance is dependent on industry structure. Therefore, the level of analysis is the industry rather than the individual firm. Industry attractiveness depends on the level of the opportunity and the threat in an industry. The average performance of firms in the economically very attracted industries will be greater than the average performance of firms in the economically unattractive industries as explained by Barney (2002).

Chaffey (2002) supports Porter's classic model of the five main competitive forces and he says that it still provides a valid framework for reviewing threats arising in the e-business era. The value of Porter's model enables managers to think about the current

situation of their industry in a structured, easy-to-understand way as a starting point for further analysis.

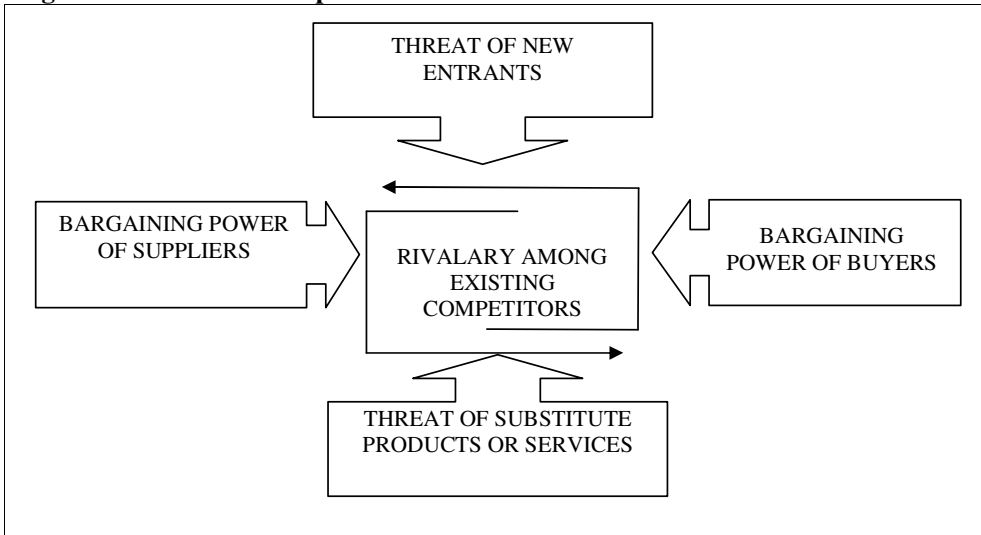
Some of the critiques on Porter's theory of the five forces are:

- ✓ Traditional Porter's thinking was largely limited to achieve a better competitive position against other players. Now it is more important to form co-operations for mutual benefits. With this focus, it does not really take into consideration strategies like strategic alliances, electronic linking of information systems of all companies along a value chain, virtual enterprise-networks or others. However, Porter (2001) says that the Internet has a powerful impact on the supply of information to customers and relationship between firms and their suppliers and there is no need to change the theory of strategy to deal with the Internet.
- ✓ Porter's theories based on the economic situation in the eighties. This model might not explain today's dynamic changes. Porter's five forces model may have some major limitations in today's market environment. It does not reflect the inevitability of certain dis-intermediation effects and new partnering realities such as brokers.
- ✓ In the economic sense, the model assumes a classic perfect market. The more an industry is regulated, the less meaningful insights the model can deliver.
- ✓ The model is best applicable for the analysis of the simple market structures. A comprehensive description and analysis of all five forces gets very difficult in complex industries with multiple interrelations, product groups, by-products and segments.

According to Porter (1985), the rules of competition are represented in “five competitive forces” as shown in figure (2.2). These competitive forces are entry to the new competitors, threat of substitutes, bargaining power of buyers, bargaining power of suppliers, and rivalry among the existing competitors. Porter (1985) explains that the industry structure is relatively stable, but can change over the time as an industry evolves, and the strength of the five competitive forces varies from one industry to another. The five forces determine the industry's profitability because they influence the price, cost,

and the required investment of the firms in an industry. The buyer's power influences the price that a firm can charge and influence cost and investment. The bargaining power of suppliers determines the costs of raw materials and other inputs. The intensity of rivalry influences prices as well as the costs of competing. The threat of entry places a limit on prices, and shapes the investment required to deter entrants.

**Figure 2.2. The Five Competitive Forces**



*Source:* Porter 1985

### **2.1.6. Obstacles to Business Growth**

The World Bank applies four dimensions to measure starting a business (IBRD 2005). These dimensions are: number of procedures, time, cost, and the minimum capital that the entrepreneur must deposit in a bank before registration starts. In each case, a higher number indicates that opening a business becomes more difficult and that fewer entrepreneurs will do so. The employment regulations are designed to protect workers from arbitrary, unfair, and discriminatory actions by their employers. These regulations are: minimum wage, overtime work, grounds for dismissal, and severance pay. The

dimensions of this indicator are: difficulty of hiring, rigid work hours, difficulty of firing, and cost of firing.

The report of the World Bank on regulations of doing business in 2005 reported that:

- √ Businesses in poor countries, for example, face much larger regulatory burdens than those in rich countries; they face three times the administrative costs, and nearly twice as many bureaucratic procedures and delays associated with them and they have fewer than half the protections of property rights of rich countries.
- √ Heavy regulations and weak property rights exclude the poor from doing business. In poor countries a high percentage of the economy is random; women, young and low-skilled workers are hurt the most.

For many SMEs, the unpredictability of doing business and the complexity of procedures and regulations in many developing countries are perceived as major barriers. Furthermore, access to finance, new technology and good reliable infrastructure, especially for communications and logistics, are all special problems for growth-oriented SMEs (OECD 2000e). De Soto (2000) answers the question why are the poor in third world countries rich in assets but they remain poor in capital?. He claims that the poor do not really own the property they work, because they are not registered as owning it, and because of this, they can not turn it to capital. De Soto (2000) shows that it is legal title to property that transforms labor into capital and without title there can be no contracts with strangers. Thus, the market is restricted and the growth of wealth retarded. Furthermore, De Soto (2000) explains that it is not culture or religion that holds back enterprise in the third world, but law. Also, he shows that capital is a potential to realize “surplus value” rather than a stock of stored up labor or money. Different factors can measure the appropriateness of the business environment such as: the are: starting and closing a business, enforcing contracts, protecting investors, getting credit, registering property, and hiring and firing workers (Doing Business 2005).

## **2.2. Small and Medium Sized Enterprises (SMEs)**

This section discusses the SMEs' definitions, theory of small firm growth, the potential economic and social benefits of the SMEs and the SMEs' strategies.

### **2.2.1. Definitions of the SMEs**

Peterson et al. (1986) explain that both quantitative and qualitative measures are used in defining the SMEs. These definitions vary according to the geographic area and the purpose of the study. Quantitative measures are the most popular tools to define the SMEs such as the number of employees and the annual turnover. The most frequent upper limit is 250 employees as in the European Union. However, in the United States the SMEs include firms with less than 500 employees. In general, small firms are those with fewer than 50 employees, while micro-enterprises have at most ten and in some cases five workers (OECD 2000c). Financial assets are also used to define the SMEs. Gunasekaran et al. (2000) suggest that the SMEs need to be defined within the context of the country in which they operate, as typically, the concept varies by the change of country.

Tolento (2000) summarizes some of the potential economic and social benefits of the SMEs to their capacity as follows: (a) create jobs at low cost of capital; (b) contribute positively to the Gross Domestic Product (GDP); (c) provide an opportunity to expand the entrepreneurial base; (d) provide the required flexibility to adapt to market changes; (e) provide support to large scale enterprises; (f) enter into market niches which are not profitable for larger enterprises; and (g) contribute to development policies that are more oriented towards decentralization and rural development. Nevertheless, all the above may never be fully realized without an adequate regulatory system and an encouraging environment.

Story (1994) defines the SMEs as follows: (a) enterprises with a relatively small share of their market; (b) managed by owners or part-owners in a personalized way, and not

through the medium of a formalized management structure; and (c) acting as separate entities, in the sense of not forming part of large enterprise or group. While it is acknowledged that using the number of employees as a measure of firm size may create a number of anomalies.

Storey (1994) discusses the general differences between large and small firms in terms of centrality of owner-manager, the structure, resources and number, and variety of products and range of markets served. In smaller firms, owner-managers are less able to influence competitive environment than larger firms. Besides, smaller firms' organization structures are likely to be organic and loosely structured rather than mechanistic and highly formalized (Jennings and Beaver 1997). In smaller firms, all the roles will either be performed by one manager or by a very narrow range of managers who may have been appointed because they are family members or friends rather than on the basis of ability or education. However, small firms generally have little commitment to research and development (R&D) and are highly dependent on external knowledge sources (Vossen 1998).

The size of the SMEs in the developed countries is interlinked with the size of the international niche markets where they compete, while the size of the SMEs in the developing countries is mostly determined by the domestic markets where they operate. Moreover, the SMEs in developed countries are more likely to be highly specialized compared to those in the developing countries. Most of the SMEs in the developing countries are one-person businesses, and the largest single employment category is working proprietors (Fisher and Reuber 2000). This group and its family represent the majority of the workforce in most developing countries. The informal relationships of the family dominate formal, explicit relationships when trust, loyalty and family ties are important to advancing the businesses (Habbershon and Williams 1999).

### **2.2.2. Theory of Small Firm Growth**

In order to improve the competitiveness of small firms is not only about understanding problems confronting businesses but also about better understanding of how to overcome these barriers. Although many factors are hypothesized to impact on business outcome, there is no consistent pattern to the characteristics, which contribute to business competitiveness, success and growth (Gibb 1996; Audretch 2001). Employment generation may be an appropriate growth function (Smallbone and Wyer 2000). However, not all small firms are growth-oriented, and the majority of owner-manager focuses on day-to-day survival. As pointed out by Storey (1994), the numerically dominant group of small businesses is those that they are small, and even if they survive they are always likely to remain small-scale operations. Jennings and Beaver (1997) show that in smaller firms all the roles will be either being performed by one person or by a very narrow range of managers who may have been appointed because they are family members or friends rather than on the basis of capability or education.

A family business is "Any business in which a majority of the ownership or control lies within a family, and in which two or more family members are directly involved." (Bowman-Upton 1991). Family members involved in the business are part of a task system and part of the family system that causes an overlap and this is where a conflict may occur because each system has its own regulations, roles and requirements. One way to align family and business goals is through business and family strategic planning (Bowman-Upton 1991). The elements in the mission statement for the business should complement the elements in the mission statement for the family.

Kotey (2005) shows that small family firms are less likely to pursue growth compared with similar non-family firms. Although medium family proprietors desired growth, their actual growth was lower than similar non-family firms. Kotey (2005) shows that management practices are less formal in family firms, and the gap between family and non-family firms in this area widened with growth. As well, exports are low for both firms at the small level. However, medium family firms are less likely than similar non-family firms to export.

Personality-based approach is a model for understanding small firms' growth. It looks at the entrepreneur as fundamental to the growth process that links the success of the firm to its owner-manager's competences and characteristics (Kets de Vries 1977; Mintzberg and Waters 1985). It also consists of a number of variations such as these that seek to link the personal characteristics of an entrepreneur with planning and the performance of the firm (McClelland and Winter 1969; Carsrud and Johnson 1989), while others like Brochhaus and Horwitz (1986) have researched personality types.

Another approach is based on business management, where growth is seen as a function of the marketplace and focuses on the financial performance as well as diversification, profitability and product/ market development (Penrose 1959; Ansoff 1965). Storey (1994) and Smallbone and Wyer (2000) suggest that consideration of the growing small firm should be based on a categorization of three components. These include the starting resources of the entrepreneur (e.g. motivation, age, education, management experience, family history and training); the firm (e.g. age, sector, location, size and ownership) and the strategy of the firm (e.g. training, market positioning, planning, and external equity).

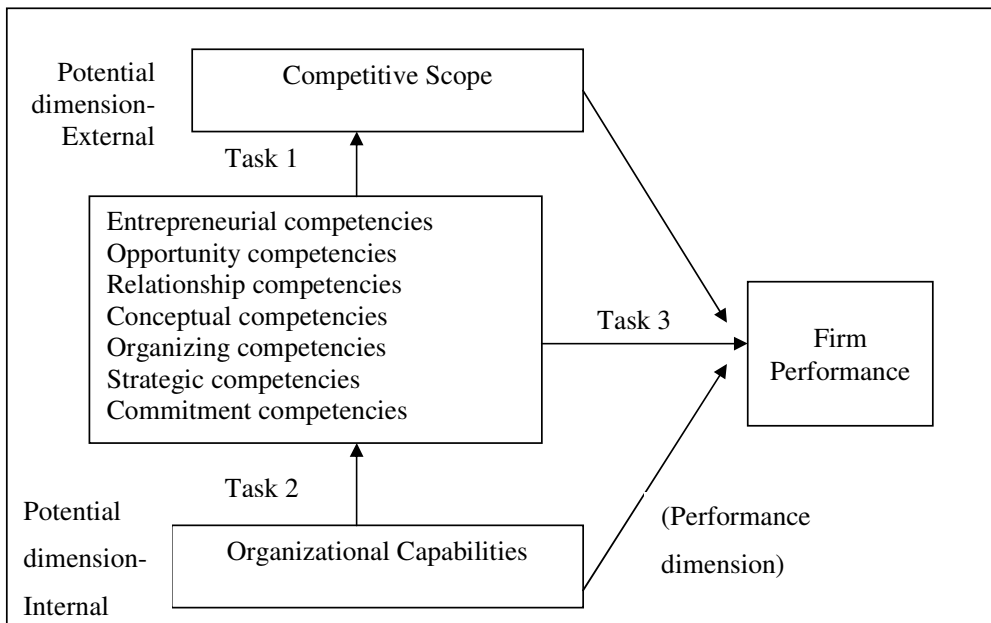
Wickhman (2001), on the contrary, shows that there is a very little evidence to suggest that any particular trait leads to successful entrepreneurship. Storey (1994) points out that, other than education, none of the factors appears to be consistently verified in major empirical studies. Rothwell (1989) believes that the innovative advantage of small firms is derived from their flexible managerial structures that are more responsive to changes in the marketplace. Jennings and Beaver (1997) note that independence may be a more important measure of success for owner-managers of businesses than financial criteria such as growth in sales, profits and cash flow.

Zairi (1996) presented a model to achieve competitiveness for small business through continuous process improvement. Zairi's model is a two-staged model that provides push and pull-forces. The first set defines the business environment that identifies the demand side of the equation that includes: customer, global markets, shareholders, environment, technology and time. The second stage of the model draws upon the firms' responsiveness to the above pushes factors- their strengths and core competences. Along

the same lines, core competencies are the essence of the formulation of an organization's competitiveness. The responsiveness criteria include teamwork, streamlined process, technology, measurement and a culture of continuous improvement.

Roper (1999) sheds light on factors determining an enterprise's business strategy and the impact such a choice holds on the firm's performance consequently. Roper sets three categories to measure strategic choices: Products and Markets, Systems and Management and Control. Performance seems to be strongly dependent on strategy choice. The one strategy choice that shows a positive correlation with both growth and profitability was the developing new exports markets, which comes as a component of products and market strategic choice. Furthermore, strategic choices are strongly tied to the firm's environment. Such a result is significantly relevant to this research. In order to develop a conceptual model of the SMEs' competitiveness, Man and Chan (2002) argue that the entrepreneurial competencies include the process dimension and the entrepreneur should scan the external factors and focus on the firm's internal capabilities (figure 2.3).

**Figure 2.3. The SMEs' Competitiveness Model (Man and Chan)**

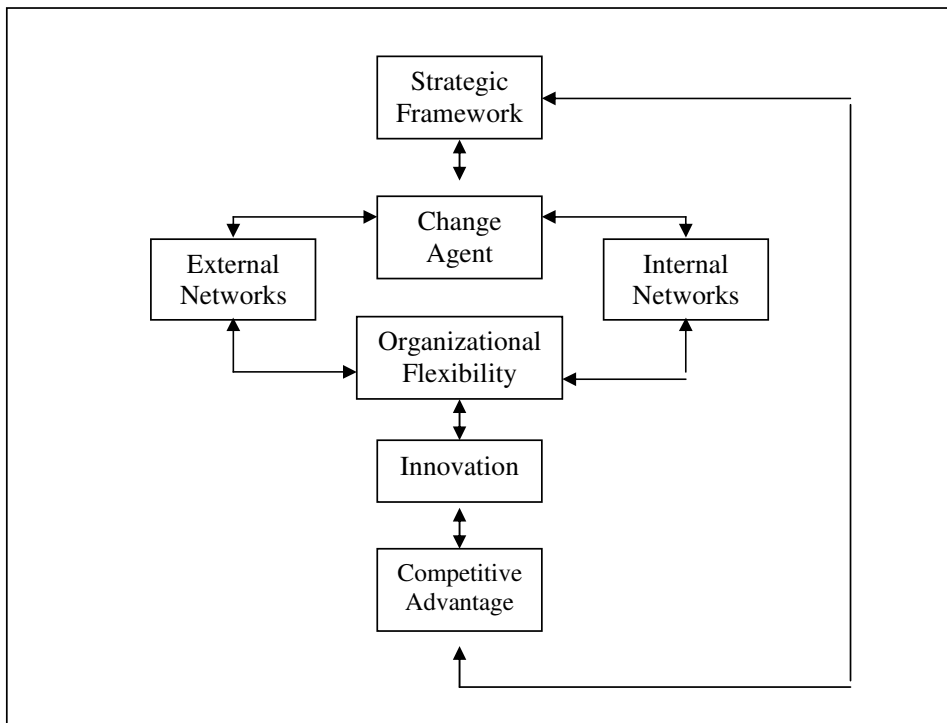


Source: Man and Chan 2002

Competitiveness is the mean by which entrepreneurs can improve their firm's performance, and which can be measured according to a number of dimensions including market share, profit, growth, and duration. At the same time Man and Chan (2002) stress the importance of links between competitiveness and performance as having a long term rather than a short-term orientation. They conclude that their theoretical framework is complex and therefore difficult to be operationalized.

Jones (2003) develops a conceptual framework for the competitive advantage in small firms (figure 2.4). To be effective, Jones shows that the starting point for the SME must begin with the owner-manager establishing a broad strategic framework for the firm. He also ensures that organizational flexibility is the key source of competitive advantage for most SMEs. Jones (2003) argues that the best measure of competitive advantage for the SMEs is value-added rather than profit, return on investment or market share.

**Figure 2.4. Framework for the Competitive Advantage in Small Firms**



*Source:* Jones 2003

### **2.2.3. The SMEs' Strategies**

There are different definitions for the firm's strategy. All these definitions are sharing in defining the strategy as an action to be taken in the future. Mintzberg and Waters (1985) consider corporate strategy as a political process, which is socially constructed rather than an unproblematic aid to the rational decision-making. Porter (1996) defines strategy as "The creation of a unique and variable position, involving a different set of activities." He states that the essence of strategy is choosing to perform activities differently from rivals do and those firms must consider strategic positioning and strategic fit when crafting strategies. Barney (2002) defines the strategy as "A firm's theory about how to compete successfully." The principle strategies that the SMEs have pursued to create and sustain competitiveness have been discussed in 'Bologna 2000 SME Conference.'

#### **2.2.3.1. Porter's Generic Strategies**

Porter (1980) determines three generic strategies firms can possess: the cost leadership, differentiation and focus. Sources of cost advantage are likely to be rare including learning-curve economies, differential low-cost access to factors of production, and technology. Firms can differentiate their products in different ways: product features, linkages between functions, timing, location, product mix, links with other firms, product customization, product complexity, consumer marketing, distribution channels, service and support, and reputation. Firms focus on a particular market niche and company resources are devoted to maintain market leadership in that niche.

By concentrating on the industrial level, Porter (1979, 1980, 1985) underestimated the importance of the unique resources within the firm. Moreover, his work has been criticized for becoming too eclectic (Van Gils 2000). Furthermore, recent work contradicts Porter's assertion about being "stuck in the middle." This work suggests that the firms that are successful in both cost leadership and product differentiation can often expect to gain sustained competitive advantage (Barney 2002). Firms that are able to differentiate successfully their products and services are likely increasing their volume of sales. An increased volume of sales can lead to economies of scale, learning curve, and

other forms of cost reduction. In 2001, Porter indicates that a firm can obtain profits more than the average actor by operating at a lower cost, or by charging a premium price, or by doing both (Porter 2001).

Differentiation is more attractive to small companies, particularly when linked with focus. In a survey to the 1500 smaller companies across Europe, the 3i European Enterprise Center (1994) found that the companies that achieved growth in sales and/ or profits were implementing the differentiation strategy. In 1993, 3i carried out a survey to the 3500 UK super league companies. It concluded that most of these high-growth companies served niche markets following a strategy of differentiation. Providing higher quality products when compared to competitors and being innovative are the key elements of the differentiated strategy (Jones and Tilley 2003). Besides that, marketing, development of alliances and the focus on the ethical issues comprise important components of the differentiated strategy (Kazem 2004).

The generic strategies rely on a static picture of competition, and thus understate the role of innovation (Stalk et al. 1992). As well, they overemphasize the importance of industry structure (Rumelt 1991) and the wider environment, while they de-emphasize the significance of individual company differences in the procession of resources, capabilities and competence (Prahalad and Hamel 1990). O’Gorman (2001) notes that ‘success strategies’ are characterized as high growth businesses. High growth businesses in turn are competitive on product quality, price and new product offering. Firms competing on the basis of innovation would essentially be oriented towards continuously offering a product that would take a high rank on the ‘state-of-the-art’ scale in the market.

#### 2.2.3.2. Innovation Strategy

Innovation is a broad term that encompasses any new development in firms (OECD 2000d). It can involve creating or reengineering products or services to meet new market demand, introducing new processes to improve productivity, developing or applying new marketing techniques to expand sales opportunities, and incorporate new forms of

management systems and techniques to improve operational efficiency (Porter and Stern 2001). The most important impediments to innovation in the SMEs (OECD 2000d) are:

- ✓ Limited resources within many SMEs for carrying out research and development. Investing in new knowledge is a risky activity that most SMEs cannot justify.
- ✓ Access to new technologies and know-how
- ✓ Ineffective rules, procedures, education and training programs

In his research paper "Innovation: Location Matters" Porter (2001) showed that innovation is a process rather than a single event and the internal factors that drive innovation are undeniable, but the external environment for innovation, at least, has the same importance. One of the most systematic examinations of innovation in the SMEs utilizes resources-based theory, which stresses the way in which internal factors including knowledge, skills, patents and brands are combined in unique ways by means of managerial capabilities (Grant 1998). This combination of resources and capabilities leads to the creation of core competences, which help establish the firm's competitive advantage (Prahalad and Hamel 1990).

Hoffman et al. (1997) identify positive relations between the SME's innovation and profitability. Vossen (1998) provides a brief summary of small firm's innovation strengths and weaknesses. Also, the relationship between competitive advantage and the SMEs' capabilities is the subject of Yu's (2001) literature review. Tidd et al. (2001) discuss a range of mechanisms for measuring both innovation output and organizational performance, which are relevant to smaller firms. Barnett and Storey (2000) reported on detailed interviews with owner-managers concerning innovation in the SMEs. Freel (1999, 2000) used data from a postal questionnaire to investigate the barriers to innovation in 238 manufacturing SMEs based in the West Midlands. Freel (2000) suggests that there are four constraints on the ability of SMEs to innovate. These constraints are: finance, management and marketing, labor, and information. A questionnaire survey of CEOs in 445 Quebec-based SMEs was used to investigate links between innovativeness and competitiveness (Lefebvre and Lefebvre 1993).

Bagch-Sen (2001) carried out a questionnaire survey of 54 SMEs in the Niagara region of Canada. The research was designed to investigate the relationship between innovation and competitive advantage. The SMEs were classified as either high or low innovators according to the number of new or revised products they had introduced in the previous five-year period. It was found that innovators performed higher in terms of sales and exports. Also, there were direct links between increased R&D expenditure and innovativeness in terms of the introduction of new products and in higher levels of export intensity. Furthermore, quality, specialization, speed of delivery and after sales services were regarded as much more important in terms of improved competitiveness by innovators in comparison to non-innovators who tended to concentrate on low-cost leadership strategies. Also, high innovators placed more emphasis on a wide range of network linkages to access services such as market research, advertising, legal, banking, insurance and technical support. However, Scozzi et al. (2005) present the problems facing the SMEs in innovation processes and the possible support offered by business modeling techniques. Though methods and models alone do not assure the success in the innovation development process, they are enabling factors and can support the creation of strategies, reasoning, insights and communication.

#### 2.2.3.3. Network and Cluster Strategy

The SMEs belong to clusters and networks are often more competitive and innovative than those operating in isolation (OECD 2000f). Some clusters are structured and formal while others are informal. Some clusters are shared at general information, while others deal with more specific objectives. Networking allows the SMEs to combine the advantages of smaller scale and greater flexibility with economies of scale and scope in larger markets – regionally, nationally and globally. A large number of firms result in greater competition for new ideas and facilitates (Porter 1990). Competitiveness of small firms is strongly influenced by the level of the inter-firms collaboration. The links take different shapes in which different firms join together to co-produce, co-market, or co-purchase, cooperate in new product development, or share of information.

While networking is viewed as an important requirement in enterprises of all sizes, these learning opportunities are argued to be of particular importance to small firms in order to offset the vulnerability of size acting as the key determinant of organizational success. Pecas and Henriques (2006) argue that the collaboration between universities and the SME companies should be based on a small-projects base. These projects must be focused in localized and specific problematic areas in the industrial companies. Ramsden and Bennett (2005) provide a better understanding of the form of intangible benefits that businesses receive from advice.

#### 2.2.3.4. Flexibility Strategy

The SMEs have the ability to change the direction quickly at low cost. Small businesses offer some of the best options for making meaningful productivity gained in the global marketplace based on their flexibility and speed in adapting to market dynamism. According to Jones and Tilley (2003), organizational flexibility is the key source of competitive advantage for most SMEs. Rothwell (1989) believes that the innovative advantages of small firms are derived from their flexible managerial structures, which are more responsive to changes in the marketplace (Vossen 1998). However, smaller firms have little commitment to the R&D and are information-constrained which make them highly dependent on external knowledge sources. Halberg (2000) has noted that the SMEs are often viewed as being more innovative than larger firms. The SMEs adopt high quality, flexibility, and responsiveness to customer needs as means of competing with large-scale mass producers. However, accounting for their relatively limited base of resources the contribution of innovations to productivity often takes time that is longer than in larger firms.

### **2.3. Information and Communications Technology (ICT)**

The emergence of the ICT especially the Internet challenges the traditional business logic. The new economics of information therefore creates opportunities and threats to the firms. Thus, the shifts will occur at different speeds with varying intensities for all industries open to deconstruction. (Evan and Wurster 2000).

#### **2.3.1. Challenges of the ICT**

Information and Communications Technologies (ICT) include technologies such as desktop and computers, software, peripherals and connections to the Internet that are intended to fulfill information processing and communications functions. Porter (2001) defines the Internet as “An enabling technology- a powerful set of tools that can be used, wisely or unwisely, in almost any industry and as part of almost any strategy.” The introduction of the Internet and the World Wide Web is leading to fundamental changes in operating models employed by businesses (Kleindle 2001). Thus, firms must consider new business models that take advantage of existing and emerging internet-based technologies in order to stay competitive.

Venkatraman and Henderson (1999) show that the new economics of information challenge traditional business logic, and thus the appropriateness of the current business model rooted in the industrial economy is questionable. Porter (2001), on the other hand, exhorts business leaders to “return to fundamentals” and stop thoughts of “new business models” or ‘e-business strategies” that he encourages managers “to view their Internet operations in isolation from the rest of the business.” Porter indicates that many of the companies that succeed will be ones that use the Internet as a complement to traditional ways of competing, not those to set their Internet initiatives a part from established operations.

Many organizations view investment in information not as means to cost reduction but as a way of adding value. To achieve that, they need an information systems strategy that is

an integral part of their business strategy (Galliers 1987). Levy and Powell (1997) identify two dimensions for the strategic context that create four competitive scenarios. These two dimensions are customer dominance and strategic focus. The four competitive scenarios are efficiency, coordination, collaboration and innovation (Table 2.1).

**Table 2.1. Four Competitive Scenarios for SMEs and ICT**

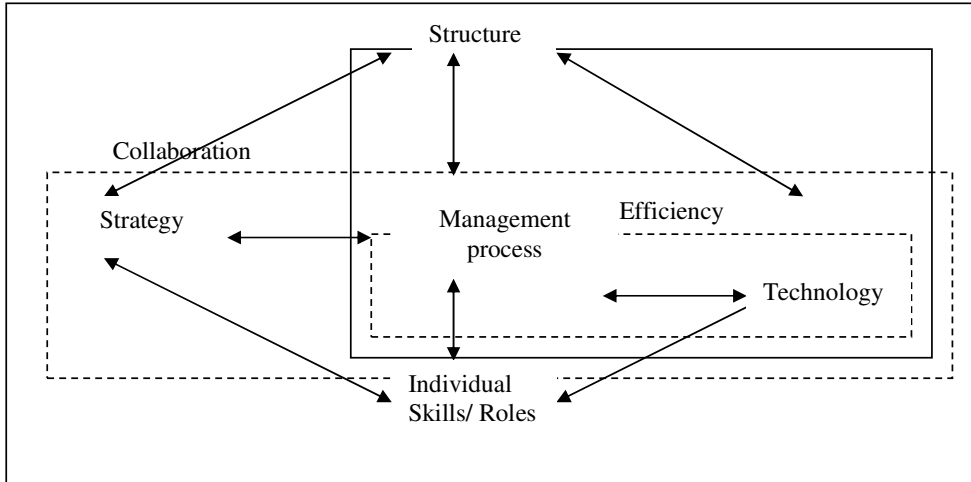
<b>Customer Dominance</b>	<b>Low</b>	<b>Coordination</b> Word processing Accounting Customer databases E-mail, Internet	<b>Innovation</b> Word processing Accounting Customer databases E-mail, Internet MRP EDI CIM LANs
	<b>High</b>	<b>Efficiency</b> Word processing Accounting E-mail, Internet	<b>Collaboration</b> Word processing Accounting MRP EDI E-mail, Internet Performance Measurement
		<b>Cost Focus</b>	<b>Value Added</b>
		<b>Strategic Focus</b>	

*Source:* Levy and Powell 1997

The focus of the ICT use in the efficiency quadrant is for control of the business, primarily financial control, and there is no integration with business strategy. In the coordination quadrant, the systems are required to keep costs down and the main additional use of the ICT is in improving customer care due to the larger customer base. There is only a limited integration of the ICT with business strategy, and the ICT are viewed as a cost to the business. In the collaboration quadrant, there is an increase in the sophistication of the technology used, while in the innovation quadrant there is an integration of the ICT with business strategy.

Levy et al. (1999) link their analytical model combining customer dominance and strategic focus and the four competitive scenarios for the SMEs to the MIT90s framework (Scott Morton 1991) as shown in figure (2.5).

**Figure 2.5 Linking SME Classification through the MIT90s Model**



*Source:* Levy et al. 1999

One way of looking at the role of Information Systems (IS) within an enterprise is the five-era view. The five-era of Information Systems as (Applegate et al. 1996) suggest are: Data Processing, Management Information Systems, Strategic Information Systems, Business Process Reengineering, and e-Business. While, Venkatraman (1999) develops five levels of IT- induced reconfiguration as shown in figure (2.6). These levels are localized exploitation, internal integration, business process redesign, business network redesign, and business scope re-definition. These levels are not conceptualized as a stage of evolution model but as distinct levels of business reconfigurations within an explicit focus on the role of Information Technology.

**Figure 2.6. Five-levels of IT-Induced Reconfiguration**

High						
Degree of Business Transformation					Business Scope Redefinition	
				Four: Business Network Redesign		
			Three: Business Process Redesign		Revolutionary Levels	
		Two: Internal Integration			Evolutionary Levels	
	One: Localized Exploitation					
Low						
	Low					High
	Range of Potential Benefits					

Source: Venkatraman 1999

### 2.3.2. Applications of the ICT and the SMEs

The SMEs tend to move into electronic business (e-business) in stages. The first step involves using the Internet as a tool for communicating and obtaining information. In a second phase, the SMEs consider basic electronic commerce activities such as buying and selling. Finally, the SMEs start conducting banking and financial transactions (OECD 1998, 2000f). Wainwright et al (2005) provide a review and critique of the benchmarking literature with respect to information and communications technology (ICT) adoption and usage within small firms. Their work is used as the basis for developing a competence based model contingency framework to be used for comparing practice and performance with respect to the ICT within small firms.

Lucchetti, and Sterlacchini (2004) carry out an econometric analysis on the adoption and effective use of the ICT among a sample of the Italian SMEs. In order to understand the main factors that drive the SMEs to the adoption of the ICT, they divide the available technologies according to a taxonomy based on their typical function. Iffour (2004) discusses interoperability concerns of the SME when it comes to the use of the ICT products and services. Locke (2004) discusses the impact of adopting the ICT on the growth of small businesses in New Zealand. Cuadrado-Roura and Garcia-Tabuenca (2004) show that the usage of the ICT in business is not some thing that takes place homogeneously or in the same speed particularly in the case of the SMEs.

Kleindl (2001) and Buhalis and Deimezi (2003) argue that the traditional economies have experienced a slower uptake of e-commerce. This is attributed to the difficulties in enhancing the usage of personal computers and in increasing the utilization of the Internet and the ICT throughout their production mechanisms. Duan et al. (2002) focus on the ICT skill challenges in the SME in Great Britain, Poland and Portugal. They show that the SMEs play a pivotal role in sustaining employment and creating income and prosperity.

Shiels, McIvor and O'Reilly (2003) show the phenomenon of the Internet has forced organizations to examine their existing business practices and adopt new methods of working, both for existing and potential customers. Their paper presents an analysis of a pilot study of 24 SMEs, which seeks to bring out the various determinants of employing the ICT and the level of sophistication of use. The findings highlight that characteristics of the firm and industry sector are contributory factors to the extent of adoption and exploitation of the ICT by the SMEs, to support business processes.

Blili and Raymond (1993) argue that the introduction of the Internet into the SMEs tends to be fragmented and based around operational support and transactions processing. Levy and Powell (1997) conclude that the tendency in manufacturing the SME is to view investment in the ICT as a cost. A report by the organization for Economic Co-operation and Development (OECD) shows that the ICT sector is not a prerequisite for economic growth. Countries with a strong information technology sector, such as Japan, have

recorded slow overall growth while, on the other hand, countries like Australia have shown strong growth without the benefit of a large ICT sector (Singh 2001). Moreover, only a few countries have the necessary competitive advantage to succeed in the ICT output, especially among developing countries.

Eid, Trueman and Ahmed (2006) found that the use of the Internet affects business-to-business international internet marketing (B2B IIM) efficiency, not directly but indirectly, through B2B marketing and customer relations activities, international marketing targeting activities and marketing performance. This means that the competitive advantage of marketing efficiency is not automatically achieved with the adoption of the internet.

Julien and Raymond (1994) find that management information systems provide no benefits to the SMEs in terms of performance. They argue that a firm with more sophisticated information systems tending to perform worse than those with more limited systems. They maintain that this is primarily due to the SMEs' limited information systems knowledge and skills which precludes them taking advantage of strategic information. Hashmi and Cuddy (1990) point out that one of the problems for the SMEs is their propensity to invest incrementally in information systems rather than in a planned fashion. Hagmann and McCahon (1993) find few SMEs plan for the systems they purchase and most planning is done for transaction processing systems.

Some of the reasons for the relative low level of e-commerce use include (OECD 2000g):

- ✓ The low level of technological expertise, uncertainty about benefits, low commitment of the owner/manager, and poor understanding of the dynamics of the electronic marketplace.
- ✓ The fear of too low use of e-commerce by customers and suppliers (i.e. the lack of a critical mass of users) with the uncertainty about the legal, regulatory and tax environment.
- ✓ Ensuring the security of payments and privacy of personal data may also be a serious concern of the SMEs. Many SMEs do not know profitably how to

develop their e-commerce activities or how to cope with the complex rules governing this area.

- ✓ The dominance of English on the World Wide Web limits the Internet's usefulness for reaching potential customers in non-English speaking countries.

Piscitello and Sgobbi (2003) investigate the SMEs' responses to the challenges posed by the new economy, i.e. the joint action of the increasing globalization and the diffusion of the ICT. While on the one hand the new economy may weaken the traditional obstacles to the transformation of the SMEs into global players. It may also confront the SMEs with new obstacles and threats. The paper of Piscitello and Sgobbi provides empirical evidence on these issues by analyzing the behavior of 277 SMEs located in two of the largest Italian industrial districts. The empirical findings show the existence of the differentiated behavioral patterns in approaching the ICT and e-business applications and suggest that, at the firm level, the attitude towards the ICT and e-business reflects the company strategy in facing global competition. Tang et al. (2003) show that many SMEs have little understanding of, and cannot comprehend, future technological developments.

### **2.3.3. Competitive Elements and the ICT**

Lord (2000) shows that few companies are running a full-blown e-business and most of the firms are offering varying levels of e-commerce. Some of the benefits of the electronic commerce (OECD 2000f) are:

- ✓ Electronic commerce technologies allow automation of common processes, such as distribution, sales, after-sales service and inventory management. This automation support the SMEs to reduce transaction costs, improve product quality/customer service, and reach new customers and suppliers in existing markets and expanding in new markets.
- ✓ E-commerce could be used as a defensive reaction to competitors engaging in e-commerce, and it is also a requirement by large businesses.

- ✓ Internet-based applications can be used in product design (shortening the design process, and leading to a higher level of product customization and standardization of parts), and in production and logistics (lower inventory costs, faster production, and lower supply costs).
- ✓ Electronic commerce technologies help the SMEs actively to create new products, adopt new business practices and change their way of interacting in the marketplace, (i.e. their relations with customers, suppliers, intermediaries and competitors). Engaging in business-to-business or business-to-consumer e-commerce induces small firms to improve controlling of their business process organization. Business procedures that were conducted informally are rationalized and institutionalized.
- ✓ Electronic commerce applications push firms to reexamine the cost structure of the value chain and their competitive strategies by redefining functions and skills.
- ✓ The networking and sharing of functions enable firms to amplify the gains of electronic commerce. New opportunities for the SMEs stem from the integration of supply and demand chains through horizontal inter-firm linkages between suppliers and customers and from the creation of production clusters. They can contribute to solving the SMEs' problem of lack resources and access to technology by promoting transfer of knowledge through the use of integrated processes.

Smallbone et al. (2003) are concerned with the nature and extent of product and process innovation and adoption of the ICT in the SMEs. Their paper is based on extensive postal surveys conducted in southeast (SE) England, Northern Ireland (NI), and the Republic of Ireland (RoI). Data collected from all three surveys show that sales growth, employment growth, and profit margins were higher for innovators than growth, for non-innovators. With regard to the nature and extent of the use of the ICT and e-business, the survey found a higher level of adoption of nearly all ICT facilities in SE England compared with the levels in NI and the RoI. Tetteh (1999) and O'Toole (2003) describe a framework for the analysis of online infrastructure of the SMEs based on the concepts of business networks and virtual organization. Tetteh (1999) explains that the extended business

scope enhances the firm's strategic opportunities and can contribute to its competitive performance.

Small and Medium Sized Enterprises (SMEs) in developing countries need to be able to figure out how, when, and where to use the e-commerce techniques to reap the above gains. The main obstacles of using the e-commerce in the developing countries are higher costs to access the Internet and language barrier in addition to the lack of understanding of e-commerce techniques and the technology needed to use it. The usage of e-commerce for growing SMEs in developing countries is becoming a prerequisite for competing well in markets, and for dealing with other business partners and customers. Furthermore, the SMEs in the developing countries are facing more challenges when trying to gain from e-commerce than businesses in the developed countries. Some of these challenges are relating to technical infrastructure, laws and regulations, and limited logistics systems (OECD 2000g).

## **2.4. Summary**

This chapter presents the theoretical background of the three major areas of the research: small and medium sized enterprises (SMEs), competitive advantage, and the role of information and communications technologies (ICT) on the competitive advantage of the SMEs. As well, the chapter discusses different models for the small businesses' growth.

Competitiveness of a firm can be expressed in a variety of terms depending on the context. Within a macroeconomic perspective, a competitive firm develops and sustains a level of performance that contributes to the Gross Domestic Product (GDP), employment opportunities, and the wealth of people. From an entrepreneurial perspective, a competitive firm needs to survive in the market, at present and the days to come, and to achieve market share and profitability. Competitive success can be measured by both objective and subjective criteria. Objective criteria include return on investment, market share, profit and sales revenue, while subjective criteria include enhanced reputation with customers, suppliers, and competitors, and improve quality of delivered services.

Some of the potential economic and social benefits of the SMEs are: create jobs at low cost of capital; provide an opportunity to expand the entrepreneurial base; provide the required flexibility to adapt to market changes; provide support to large scale enterprises; and enter into market niches which are not profitable for larger enterprises. In order to improve the competitiveness of small firms is not only about understanding problems confronting businesses but also about better understanding of how to overcome these barriers. This study discusses different competitive models such as: personality-based approach; Zairi (1996) model of continuous process improvement; Roper (1999) model that focuses on enterprise's business strategy; Man and Chan (2002) model that include the external factors and the firm's internal capabilities; and Jones (2003) framework that relies on the owner-manager to establish a broad strategic framework for the firm.

In this study the concept of the Balanced Scored Card (BSC) has been used as an indicator of the firm's competitive advantage. The BSC has four perspectives: financial, customer satisfaction, internal business, and innovation. Financial performance indicators

are always lagging indicators. Some of these indicators are return on investment, profitability, revenue growth, cost reduction and exportation. The customer perspectives typically include several common outcomes measures. These are customer's satisfaction, customer's retention, customer's acquisition and market share in targeted segments. Beyond just retaining customers, many companies wish to measure customer's loyalty by the growth of business with those customers. The internal process perspective is unique for each organization. It measures employees' satisfaction, employees' keep on and employees' productivity. The innovation perspective includes percentage of new products of total turnover and time necessary to develop new generation of products.

The Information and Communications Technology (ICT) allows automation of common processes, shortening the design process, leading to a higher level of product customization and standardization of parts, lowering inventory costs, and reexamining the cost structure of the value chain and their competitive strategies by redefining functions and skills. Furthermore, the ICT can contribute to solving the SMEs' problem in terms of the lack of resources and access to technology by promoting transfer of knowledge through the use of integrated processes.

Several surveys point to the fact that the SMEs tend to move into the electronic business world in stages. The first step involves using the Internet as a tool for communicating and obtaining information. In a second phase, the SMEs consider basic electronic commerce activities such as buying and selling. Finally, the SMEs start conducting banking and financial transactions. On the other hand, there are reasons for the relative low level of Internet usage such as low level of technological expertise, uncertainty about benefits, low commitment of owner/manager, poor understanding of the dynamics of the electronic marketplace. In addition to that, the fear of too low use of e-commerce by customers and suppliers with the uncertainty about the legal, regulatory and tax environment play as major obstacles of using the Internet by the SMEs.

## **CHAPTER THREE**

### **THE AGENDA OF JORDAN, TURKEY AND ITALY**

This chapter presents the profile of Jordan, Turkey and Italy. Section 3.1 discusses the economy of Jordan, Turkey and Italy. Section 3.2 presents the natural stone sector in these countries. A summary of the chapter is presented in section 3.3. Appendix C presents general information about Jordan, Turkey and Italy.

#### **3.1. The Economy of Jordan, Turkey and Italy**

The World Economic Forum (WEF) has been trying to shed light on the question of why some countries are able to grow on a sustained basis while others remain stagnant. The WEF discusses: the Growth Competitiveness Index (GCI) and the Business Competitiveness Index (BCI). The Growth Competitiveness Index (GCI) is composed of three components: the quality of the macroeconomic environment, the state of country's public institutions, and a country's technological readiness. While the Business Competitiveness Index (BCI) evaluates the microeconomic conditions and defines the current sustainable level of productivity in each country. The BCI evaluates two specific areas: the sophistication of the operating practices and the strategies of companies, and the quality of the microeconomic business environment in which a nation's companies compete (WEF 2005).

Economists often focus on helping poor countries become richer by improving primary education and infrastructure such as roads and telephones. Unfortunately, it is only a small part of the problem. Economists who have pulled apart the statistics, or studied unusual data have found that education, infrastructure, and factories only explain the gap between rich and poor countries. More important, why can't the poor country seem to do anything about it? Couldn't improve its schools, factories, license technology, and seek foreign partners? The problem of twisted rules and institutions explains part of the gap while the corruption destroys every effort to improve the infrastructure, attract investment, and raise educational standards (De Soto 2000).

Table (3.1) summarizes the GCI and BCI for Jordan, Turkey and Italy. Italy has the highest rank in the Business Competitiveness Index (BCI) in comparison with Turkey and Jordan. Italy's rank in 2003 was (34) out of (103) countries. This means that the educational system in Italy is competitive at the international level especially in the engineering and design. As well, Italy enjoys a quality of infrastructure, an easy access to capital and information, and a dynamic networking and clustering.

**Table 3.1. Growth and Business Competitiveness Indices of Jordan, Turkey and Italy**

	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>
<b><i>Growth Competitiveness Index (GCI)</i></b>			
GCI (2004 Rank)	35/104	66/104	47/104
GCI (2004 Score)	4.58	3.82	4.27
GCI (2003 Rank)	34/103	65/103	41/103
Technology Index (Rank)	51	52	50
Technology Index (Score)	4.02	4.01	4.08
Institutions Index (Rank)	29	62	48
Institutions Index (Score)	5.43	4.22	4.64
Macroeconomic Environment Index (Rank)	36	84	38
Macroeconomic Environment Index (Score)	4.29	3.22	4.27
<b><i>Business Competitiveness Index (BCI)</i></b>			
BCI (Ranking)	43/103	52/103	34/103
Company Operations and Strategy (Ranking)	54	44	26
Quality of the National Business Environment (Ranking)	40	55	43

*Source:* The Global Competitiveness Report, WEF 2005

Jordan has a higher rank in the Growth Competitiveness Index (GCI) in comparison with Turkey and Italy. Jordan's GCI rank in 2004 was (35) out of (104) countries, while in 2003 the rank was (34) out of (103) countries. Jordan has an advantage over Turkey and Italy in the quality of the macroeconomic environment, and the state of the country's public institutions. On the other hand, the rank of Jordan's Business Competitiveness Index (BCI) in 2003 was (43/103) and it has an advantage over Turkey. The main strengths of the Jordanian economy lie in the quality of the educational system, quality of infrastructure, judicial independence, efficiency of legal framework, protection minority of shareholder interests, and intellectual property protection. In addition, the export of Information Technology rose by around 300% in the last three years, the annual exports exceed US\$40 million, and the employment increased by (33%) from 2001 and 2002 employing about 8000 people (WEF 2005).

In Turkey, however, the macroeconomic instability continued with irregular growth and high and variable inflation rates, along with political instability and numerous changes in governments giving rise to frequent unexpected policy changes and slow implementation of structural reforms. These have badly hurt the attractiveness of Turkey as a place to invest. In addition to the economic and political instability, the weaknesses in the regulatory environment for business seem to play a role as an impediment to foreign direct investment (FDI) in Turkey. As well, administrative procedures, gaps in regulation, inconsistent application of laws, extensive red tape, and unpredictable and lengthy judicial enforcement are lengthy and unpredictable.

### **3.1.1 The Economy of Jordan**

Table (3.2) summarizes the main indicators of the Jordanian economy during the years (1999– 2004). In 2004, Jordan's real GDP growth rate reaches (7.5%), the unemployment rate and the inflation rate reach to (12.5%) and (3.4%) respectively (CBJ 2005). Furthermore, the table shows that there is a deficit in the trade balance by USD 4.18

billion, and the average change in imports is much higher than the average change in total exports.

Jordan suffers inadequate supplies of water and other natural resources such as oil and coal. During the 1970s and early 1980s Jordan benefited from the Arab aid during the oil boom, when its annual real GNP growth averaged more than (10%). The Persian Gulf crisis in 1990 slowed real economic growth to an average of roughly (2%) per year (Oxford Business Group 2003). Jordan's economy is mainly service-oriented that contributes (71%) to GDP and employs two-third of the labor force. The remaining 29% is contributed by the agricultural and industrial sectors (JMOIT 2003).

**Table 3.2. Major Economic Indicators – Jordan**

<b>Indicator</b>	<b>2004</b>
GDP at Market Prices (US\$ bn)	11.19
Real GDP Growth Rate (%)	7.5
GDP per Capita at Current Prices (US\$)	2103
Inflation (%)	3.4
Unemployment Rate (%)	12.5
Total Exports (US\$ bn)	3.95
<i>Average Change (%)</i>	28.2
Domestic Exports (US\$ bn)	3.29
<i>Average Change (%)</i>	39.3
Imports (US\$ bn)	8.13
<i>Average Change (%)</i>	41.5
Trade Balance (US \$ bn)	-4.18
Exports from QIZ (US\$ mn)	1121.2
<i>Average Change (%)</i>	48.1
<i>As a % of Domestic Exports (%)</i>	34.1

*Source: JMOP 2005; CBJ 2005*

Unemployment, debt and poverty remain Jordan's biggest on-going problems (Turner 2001). Jordan's labor force is roughly 1.19 million, around (25.8%) of the population (CIA 2005). While great efforts have been made towards solving Jordan's unemployment problem, the rate remains high at an officially estimated (15.7%) in 2002, (14.5%) in 2003 and (12.5%) in 2004, but the unofficial figures are much higher (CIA 2005). Jordan's growth has not equally benefited all population groups, where the fruits of

growth are concentrated more in the hands of few people. The average of women's participation in the labor force was (11.2%) in 2003. The workforce is average in skill and the education and English-speaking population accounts for a large number of the workforce. However, the Gulf countries, by offering better salaries, attracted many Jordanian professionals. Other professionals head to Europe and the US. The Jordanian workforce is highly competitive in terms of salaries and wages. Jordan's manufacturing labor cost is equivalent to 5% of Japan's, (7.4%) of that of the United States, and close to that of India and China.

By the end of the 1980s, the Jordanian Dinar has lost more than half of its value, inflation was in double digits- reaching over (20%) at one stage- foreign currency reserves were depleted and unemployment was growing steadily (Oxford Business Group 2003). A tight monetary policy was pursued by Jordan's Central Bank through most of the 1990s. Although it deterred growth, it was successful in curbing inflation and protecting the Dinar. Inflation was reduced to (1.8%) by 2001. Having controlled inflation, the Central Bank's monetary policy has been eased and the rediscount rate was cut from (8%) in 1999 to (4.7%) in 2002.

Since the beginning of the 1990s, however, increased importance has been given to liberalizing the economy after a number of developments had brought it to the brink of collapse. The government is clearly committed to making Jordan part of the global economy by taking advantage of various free trade opportunities to develop its economy, boost exports and diversify its trading partners. In 2001, (40%) of Jordan's goods were directed towards countries in the Arab world. The US has now become Jordan's biggest trading partner, with exports jumping from USD 12 million in 1999 to USD 231 million in 2001. Iraq ranks second with USD 181.3 million in exports (Oxford Business Group 2003). Europe is also an increasingly important destination for Jordanian products. Jordan has an access to the global market through a number of effective agreements. Some of these agreements:

- ✓ Jordan became the 136<sup>th</sup> member of the World Trade Organization (WTO) in 2000

- ✓ Jordan-US Bilateral Free Trade Agreement in 2000
- ✓ Jordan-EU Free Trade agreement in 2002
- ✓ The Arab Free Trade Agreement.
- ✓ Jordan-Egypt Bilateral Economic Cooperation in 1998
- ✓ Qualifying Industrial Zones in 1998. An area provides the opportunity for duty-free access to the US for goods manufactured within the zones

The bulk of Jordan's industrial sector consists of small, family-owned enterprises. According to the Amman Chamber of Industry, the 26,000 or so companies in the industrial sector employ (15%) of the labor force and contribute (21%) of the GDP. Manufacturing companies comprises (90%) of the industrial base. Much of the private sector's industry was developed in the 1970s in response to rising demand from Iraq. However, the economic crisis of 1998, followed by the Gulf War, resulted in a complete reorientation in the Jordanian economy. In 1992, the economy began opening up and there was a renewed focus on developing exports. Industries began diversifying away from Iraq toward partners elsewhere in the Arab world, as well as Europe and the US. Unluckily, the small and fractured nature of the industrial base means that most of Jordan's industry is not prepared to export or compete in truly global competitive market place (JMOIT 2003).

The Department of Statistics in Jordan classifies different economic data according to the number of work force in three categories: establishments employing less than five workers, those employing five workers to less than 20 and the ones employing more than 20 workers. In 1997, the total number of industrial establishments is 26,000, which employ about 178,500 workers. The number of industrial establishments employing four workers and less were 19,600 and employing about 58,540 workers. Adding the number of medium-scale establishments that employ less than 50 workers, the number of the SMEs in Jordan rises to 25,400 establishments that represent (97.7%) of the total number of the industrial establishments employing some 92,800 to represent (51.8%) of the total industrial labor force. As for the geographical distribution of the small-scale industries employing less than five workers, around (44.5%) of these establishments are concentrated in the capital of Amman, while (38.9%) are concentrated in three locations

(Irbid, Zarqa and Balqa) and the remaining average is distributed around other regions in the Kingdom (DOS 2004).

In Jordan, there are few associations and programs that support the SMEs. The EU-Jordan Association Agreement (EJADA) is primarily dedicated to support the SMEs in Jordan. The European project, which was launched in July 2001, is a four and half year program worth 41.6 million Euros. It is an integrated program mainly targeting the SMEs in Jordan through four components: Technical support, financial support, vocational training, and policy support. In light of the EJADA's vision to ensure sustainability of industrial policy process, it works closely with the Ministry of Industry and Trade and the Ministry of Planning in order to develop legal and institutional reforms and promote the adoption of international standards.

Jordan Upgrading and Modernizing Program (JUMP) is a joint endeavor between the public and private sectors. It provides technical assistance, training and partial grants to industry to strengthen the managerial capabilities and technological capacities of the SMEs in Jordan. As a national program for upgrading and modernizing the Jordanian SMEs, JUMP was endorsed by the Jordanian Cabinet in October 2003. It is overseen by a 12 member steering committee, equally comprised of representatives of the private and public sectors, and headed by the Minister of Industry and Trade and deputized by the chairman of the Jordan Chamber of Industry.

The main objectives of JUMP are:

- √ Enhance productivity, improve product quality and reduce unit cost
- √ Enable enterprises to face increased competition in the domestic, regional and global markets
- √ Increase market share and develop new non-traditional export markets
- √ Benchmark and adopt best international business practices
- √ Develop strategic directions driven by market needs
- √ Enhance capabilities of human resources

In 1997 a new company law was passed and significantly revised in 2002. One of the main changes was the addition of a new type of limited liability company- the private shareholding company. This type can have varying types of shares, each enjoying different rights. The companies' law No. 22 of 1997 (amended by law No. 40 of 2002) aims at facilitating the establishment of companies and streamlining the registration processes. Companies registered under this law are divided into general partnerships, limited partnerships, limited liability companies, private shareholding companies, limited partnership in shares, public shareholding companies, non-operational foreign companies (regional offices), holding companies, joint investment companies, and exempt companies.

The Investment Promotion Law was passed in 1997 and was later improved. It is only in construction and trading companies that foreigners are banned from holding a majority of shares. Significant tax exemptions (ranging from 25% to 75% for ten years, depending on the type of project and its location) are given to all new investors, regardless of their nationality. Imports of machinery and equipment are exempt from customs. Significant reductions in personal and corporate tax rates were introduced through two income tax laws, one passed in 1995 and the other in effect since January 1, 2002. The corporate income tax rate for most sectors is now 15% while for insurance companies, services and trading companies is 25%, and for banks 35%. Personal income tax rates are progressive. They started from 5% to reach 25% drop from the previous maximum of 45%.

The literacy rate is one of the highest in the region. More than (90%) of the population over the age of 15 is able to read and write. Male literacy rates are estimated at 94% while female rates are lower at around 79.5% (CIA 2002). Jordan's educational system has developed remarkably since the 1920s, when the government began to institutionalize a comprehensive, high-quality school and university system. In 2004, there were 2963 government schools, 2179 private schools, 192 UNRWA and 21 community colleges. In addition, the Council of Higher Education supervises education in 21 universities (8 public and 13 private). The percentage of female university students is (49.8%). Education is free for all primary and secondary schools and compulsory for all Jordanian children up to the age of 15 (JMOP 2005). In Jordan, there are 17 universities that offer

33 different Information Technology related specialties. However, the university courses are more academic than practical, and they are not tailored towards the community needs (JMOP 2003). In 2004, there were 40,000 registered engineers and architects in the country, of which (43%) are civil, (23%) electrical and (19%) mechanical engineers.

Jordan has taken some major steps in the last four years towards creating a dynamic and practical approach to be a part of the international Information and Communications Technology (ICT) sector. The most significant step towards a realistic goal in developing the ICT is the creation of the REACH initiative (JMOP 2003). The REACH initiative is a marriage of the public and private sectors working together to create a dynamic and workable plan. REACH stands for (Regulatory Framework, Enabling Environment and Infrastructure, Advancement of National IT Programs, Capital and Finance, and Human Resource Development). In 2002 there were an estimated 33PCs for every 1000 Jordanians, with only 29 in every 1000 people making regular use of the Internet (Oxford Business Group 2003). The e-commerce is still at its very early stages of development. There are some websites that offer merchandize that can be bought online with the use of credit cards. However, the cost of shipping would be a disadvantage since the average Jordanian can drive to any store in his/her city in less than twenty minutes.

In order to liberate the national economy and increase the flow of foreign capital, the government of Jordan has initiated a privatization program designed to activate the role and efficiency of private investors in the long-term development plans of the Kingdom (Oxford Business Group 2003). In 1996, the Jordanian Electricity Authority was transformed to public shareholding companies. Jordan has passed many laws that are dealing with protecting the copyright of software, promoting investment, and regulating electronic transactions and signatures. The E-government program is underway, and many governmental organizations are computerized, and some are on the web (Oxford Business Group 2003; JMOP 2003). A review of the E-government in Jordan is set in the context of the contradictions and conflicts of negotiating policies that aim to extent all scales from local to global. The Jordanian strategy should balance the needs of the individual citizens with the macro pressures of globalization.

The telecommunications infrastructure is still inaccessible to all parts of the Kingdom (Turner 2001). Telephone and other communications services are still not available everywhere. The Internet diffusion is still low due to the fact that local phone calls and the personal computers are expensive. Telephone services were introduced to Jordan in the 1930s by the British Company Cable and Wireless, which continued to upgrade and run telephone network until 1966, when control was passed to the Ministry of Post, Telegraph and Telephony. In 1971 all telecom operations were spun off into a new entity, the Telecommunications Corporations of Jordan (TCJ). In 1995, the company faced competition for telephone services, with the arrival of Jordan's mobile telephone services which was granted a 15-year license to construct (Oxford Business Group 2003).

Further changes were made to allow for the privatization of TCJ itself. This involved a complete restructuring of the company in 1997 which saw it reborn as the Jordan Telecommunications Company (JTC). Since privatization, the company has expanded its range of services to include payment by pre-paid card for fixed-line services, three way conferencing, voice mail, alarm services and caller ID. The JTC also offers top end digital services using the ISDN<sup>16</sup> and ASDL standards. ISDN offers error-free digital communication and is widely used for video and picture transfer of large data files. In 2002, Fastlink has almost 1 million subscribers against 300000 for Mobilcom. At the end of 2001, Jordan had 68,000 Internet subscribers, with the companies dominating the Internet (Oxford Business Group 2003).

### **3.1.2. The Economy of Turkey**

During the 1930's, development strategies were based on rapid industrialization through State Economic Enterprises (SEE) and import substitution. Since the 1980's, Turkey's development strategy has been based on the free market economy strategy (OZ 1999). Many structural reforms have been introduced in the general framework of the Turkish Economy. Turkey's dynamic economy is a complex mix of modern industry and

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<sup>16</sup> Integrated Services Digital Network. ISDN is an international standard for transmitting voice, data, image, and video to support a wide range of service over the public telephone lines.

commerce along with a traditional agricultural sector that in 2001 accounted for (40%) of the employment while the most important industry is textiles and clothing, which is almost entirely in private hands.

The real GNP growth has exceeded (6%) in most years, but this strong expansion was interrupted by the sharp declines in the output in the recent years (Oz 1999). Meanwhile, the public-sector fiscal deficit has regularly exceeded (10%) of the GDP due to the huge burden of the interest payments while inflation has remained in the high double-digit range (CIA 2002). Table (3.3) presents the main economic performance of Turkey.

**Table 3.3. The Main Economic Indicators for the Turkish Economy**

<b>Indicator</b>	<b>2004</b>
GDP – real growth rate	8.2%
GDP per capita	\$7,400
Inflation rate	9.3%
Unemployment rate	9.3%
Exports	\$69.46 billion
Imports	\$94.5 billion

*Source:* CIA 2005

The industry structure is dominated by small and medium sized enterprises. According to the 1994 survey of industry and business establishments, the total number of the industrial establishments was 198264 (Turkish Time 2003). The small and medium sized industrial establishments comprise to 197297 of them. Table (3.4) gives the number and share of the Turkish small, medium and large industrial enterprises in terms of the total number of establishments, and the number of workers employed. It is clear from the table that small and medium industrial enterprises are predominant in Turkey; accounting for (99.5%) of the overall manufacturing industry and (65%) of the total employees. It is noticed that the total number of enterprises increased by 6.5% during the period (1992 – 2001) while the number of workers increased by 8%. The highest average (28.5% increase in the number of enterprises and 52% in the number of workers) is located in the category (50 – 249) workers (Turkish Time 2003).

The Turkish government signed the European Charter for Small Enterprises in 2002 and agreed to take concrete steps to develop policies and programs for the SMEs. As well, the Turkish government adopted the Bologna Charter in 2000, together with other OECD countries to promote bilateral and multilateral initiatives to foster global SME partnerships (OECD 2004).

**Table 3.4. Manufacturing Enterprises in Turkey**

<b>Size Category by Number of Workers</b>	<b>Number of Enterprises</b>			<b>Workers</b>		
	<b>1992</b>	<b>2001</b>	<b>%</b>	<b>1992</b>	<b>2001</b>	<b>%</b>
1 to 9	186 900	199 737	7	523 117	500 738	-4
10 to 49	7 970	7 260	-9	175 646	183 694	4.5
50 to 249	2 434	3 127	28.5	225 650	343 023	52
250 and over	795	912	14.7	553 626	570 083	3
Total	198 099	211 036	6.5	1 478 039	1 597 538	8

*Source:* OECD 2004

In Turkey, there are different programs and organizations that support the SMEs. The Turkish Five-year Development Plan (2001-2005) calls for raising product quality and enhancing the innovation and technology capacity of small business through collaboration with universities, introduction of new financing instruments, such as risk capital, and modern management techniques. Partnerships with foreign companies have been encouraged to develop the SMEs' export capabilities. The Ministry of Foreign Trade and Industry and the Small and Medium Industry Development Organization (KOSGEB), and its Enterprise Development Centers (IGEM) and Technology Development Centers (TEKMER) are aware of the SME support programs in Europe, North America and Asia.

Table (3.5) presents different definitions for the SMEs used in Turkey and the European Union.

**Table 3.5. SME Definitions Used in Turkey and the European Union**

Organization	Sectoral definition	Criterion for definition	Micro-sized enterprise	Small-sized enterprise	Medium-sized enterprise
<b>KOSGEB</b>	Industry	Number of workers		1-50 workers	51-150 workers
<b>UNDERSECRETARIAT OF TREASURY</b>	Industry, tourism	Number of workers	1-9 workers	10-49 workers	50-250 workers
Investment amount, amount of investment subject to SME incentive certificate (EUR)		550 000	550 000	550 000	550 000
<b>EXIMBANK</b>	Industry	Number of workers	--	--	1-200 workers
<b>EU</b>	Non-primary private	Number of workers	0-9 workers	10-49 workers	50-249 workers
		Annual turnover	<EUR 2 million	<EUR 10 million	<EUR 50 million
	Annual balance	sheet <EUR 2 million <EUR 10		Million	<EUR 43 million

Source: OECD 2004

For the past two decades, strategies for economic development in Turkey have shifted towards increased reliance on market forces and exposure to international competition. At the turn of the 1980s the government replaced its import substitution strategy in favor of a market-oriented economic policy. Trade liberalization was given a new drive in the mid 1990s with the signature of the customs union with the European Union (EU), which has strengthened Turkey's economic ties with Europe. Governments however, have failed to achieve macroeconomic stabilization. For two decades, the fiscal imbalances have fuelled

high inflation and undermined growth. At the end of 1999, the government launched a reform program, supported by the World Bank and the International Monetary Fund (IMF), to stabilize the economy. The government's program focuses on the banking sector, fiscal transparency, privatization and more generally an increased involvement of the private sector in the economy. However, the program collapsed with the financial crisis in November 2000 and February 2001. These developments have highlighted the difficulty to implement tight monetary and fiscal policies while strong structural weaknesses persist, and given a new impetus to structural reforms. The economic program of the government has thus entailed structural policies to provide a better environment for the economy.

Turkey eliminated tariffs on manufactured imports from the EU, adopted the EU common external tariff for manufacturing products and the industrial component of processed agricultural food, and aligned to the EU's preferential trade regime. Accordingly, Turkey signed bilateral free-trade agreements with Central and Eastern European countries, Baltic States, and Israel. The decision of the EU to accept the candidacy of Turkey to the Community at the European Council of Helsinki in December 1999 has given a new incentive to structural reforms. This entails far-reaching structural and legislative reforms in many areas, such as customs, duty concessions, competition policy, etc.

Foreign direct investment (FDI) has remained at a low level in Turkey over the past twenty years. While in the 1990s the FDI surged over the world, the level of the FDI inflows remained stable in Turkey. The FDI increased in the 1980s following the liberalization measures implemented at the beginning of the decade, but growth in the FDI has been stopped in the 1990s, with inflows averaging less than (0.5%) of the GDP. In the same time, the Central European countries, which are considered as Turkey's main competitor in the region for attracting foreign investment, scored much higher inflows (in 1999, FDI inflows accounted for (9%) of GDP in the Czech Republic, (3.9%) in Hungary and (4.2%) in Poland. Almost (60%) of the cumulated FDI has gone to the services sector. However, inflows of the FDI in the service sector have remained at low levels.

Foreign-owned banks still have a limited role in the Turkish banking sector (OECD 2004).

In 2000, exports and imports accounted for (40%) of the Turkish GDP, up from (9%) in 1979 to (25%) in 1993. For the past two decades the trade balance has always shown a deficit, but the size of the deficit has fluctuated widely with volatile domestic growth rates, in particular due to strong fluctuations of imports. The share of manufacturing in exports has increased to reach over (80%) in 2000, up from (68%) in 1990 (OECD 2004). Trade with the OECD countries, in particular European countries, has intensified since the late 1980s, while trade with neighboring Asian countries has been undermined by political and economic dislocations in the region. In 2000, the EU countries accounted for (52.2%) of the Turkish exports and (48.8%) of its imports.

The Information and Communications Technology sector (ICT) is one of the fastest growing sectors in Turkey. Its share in the GDP was (0.6%) in 1998 and it reached (0.9%) in 1999 and (1.6%) in 2000 (CIA 2002). Turkey's ICT industry has grown by (83%) in 2000 from (47%) in 1999. Turkey boasted more than 1.7 million Internet users in 2000 and the figure has reached to 3 million by the end of 2001 (Turkish Time 2003). Turkey has engaged a reform process to liberalize the telecommunications sector. A rapid upgrade of this industry has become vital to the competitiveness of the Turkish economy. In January 2000, the Parliament adopted the new telecom law, 27 which paved the way for a restructuring of the sector over a four-year period. It planned for the privatization and restructuring of the state-owned incumbent operator, Turkish Telecom (TT), introduced competition in the provision of the value added and wireless services, and established an independent regulatory authority for telecommunications. The law allowed the TT to maintain its monopoly over fixed-line services, including national and international voice telephony, until the end of 2003 (CIA 2005). The mobile market has quickly been expanded since the end of the 1990s. The number of the mobile subscribers surged from 3.5 millions in 1998 to 19.2 millions by the end of 2001. At the same time, the expansion of fixed lines has been more moderate in recent years. The number of lines per 100 inhabitants rose from less than 5 in 1985 to 25 in 1997 and 28 in 2001 (against an average of 52 in OECD countries).

### 3.1.3. The Economy of Italy

In the early post World-War II period, the Italian firms were focusing on low-cost labor. By the early 1980s many Italian industries achieved advantage based on segmentation, differentiation, and process innovation and the Italian economy has reached a significant development (Porter 1998). Italy's economic performance is lagged behind its EU partners. In 2001, the economic growth is on average (1.8%) a year that is comparatively low in comparison with other developed countries like the US (2.5%) and the Netherlands (2.2%). Constant problems include illegal immigration, the damage of organized crime, corruption, high unemployment, and the low incomes and technical standards of southern Italy compared with the prosperous north (CIA 2002). Most raw materials and energy requirements are imported (Porter 1998). Table (3.6) presents parts of the economic performance.

**Table3.6. The Main Economic Indicators of the Italian Economy**

<b>Indicator</b>	<b>2004</b>
GDP – real growth rate	1.3%
GDP per capita	\$27,700
Inflation rate	2.3%
Unemployment rate	8.6%
Exports	\$336.4 billion
Imports	329.3 billion

*Source:* CIA 2005

Internationally successful Italian Industries tend to be characterized by the small and medium sized firms that compete primarily through export, with only limited foreign direct investment. Another feature of the successful Italian industries is the geographic concentration in which many of the firms in one industry are located in a single town (Porter 1998). The structure and size of the SMEs varies sharply from one area to another. Italy adopts the European Community criteria for the definition of business dimension. In Italy, the definitions of the criteria for the medium enterprises are characterized by: number of employees is up to 250, maximum annual turnover is 40 million Euros, and the maximum annual balance sheet is 27 million Euros (DTI 2001).

The SMEs' cluster in Italy is called "Third Italy", while the southern part of Italy is called "Second Italy", and the northern part of Italy is called "First Italy" (OECD 2000 f).

Smaller companies in Italy are less able to overcome the obstacles of the geographical distance and they direct their international activity primarily to areas closer to home, in Europe and the Mediterranean, which take more than three quarters of their exports (OECD 200f). However, they have also developed initiatives for the internationalization of production in East Asia, the prevalent inducement being the quest for lower costs. Large firms instead show a greater geographical diversification of exports and a more substantial production presence in the developed markets; where their foreign investments are motivated primarily by access to skilled resources and proximity to customers.

The Italian economy is going through a very difficult period, with the GDP growth of less than 1% per year since 2000 (CIA 2005). Reflecting the strong acceleration of the world trade, the Italian economy's international openness increased slightly in 2004. The share of the output sold on foreign markets and that of domestic demand covered by imports rose to (28.7%) and (28.3%), respectively, at constant prices. These indicators, however, remained below their levels of 2000.

Italy's share of the volume of world exports fell almost uninterruptedly in the last decade. A similar trend was recorded by nearly all the developed countries, corresponding to the gains achieved by the emerging regions of Asia and Central and Eastern Europe. However, Italian exports also lost share to those of the other developed countries. One factor in this decline was the appreciation of the Euro, at least in the last three years. The competitiveness of Italian products also diminished owing to the relative increase in unit labor costs, due basically to an unfavorable differential in productivity growth. As well, the Italian exports' loss of share is attributable to the country's poor ability to attract foreign investment. Italy cannot compete with the emerging countries for the FDI inflows motivated by cost advantages. On the Italian import market, China, Eastern Europe and the oil producing countries gained share. Despite the depreciation of the dollar, the Italian imports from the United States have declined for the fourth consecutive year in volume as

well as in value, and has been penalized in part by the weakness of the Italian firms' demand for the investment goods.

In 1999 there were 61,774 ICT firms in Italy. Most of these firms operate in the software and services segment of the industry. This was followed by the firms working in hardware and technical assistance, indirect operators, and telecommunications services and equipment of firms. However, these ICT firms have played a driving role in employment growth in recent years. The largest proportion of workers has jobs with software and services firms. In addition, the firms' investment in the ICT training is also rising sharply.

There has been a jump in the number of the university degrees awarded in the disciplines of greatest interest to ICT firms, i.e. engineering, economics, and statistics. The share of the university students enrolling in the 147 full degree courses and 78 diploma courses in technological or scientific fields is also rising from (15.3%) in 1999 to 19% in 2001. In addition, in Italy they started to deliver training to the intermediate-level staff such as technicians, professional managers, and qualified operators (OECD 2000).

Although it began expanding later than in the other European countries, the Italian ICT sector is now growing rapidly. This progress has moved Italy into what the OECD calls the "Medium ICT Intensity" group of countries as shown in table (3.7). The Italian ICT market is estimated to have grown by (12.8%) in 2000, the fastest pace in Europe after Greece and Spain. In 2001, the Italian market places the fourth rank by size after the UK, Germany, and France.

**Table 3.7. List of Countries in ICT Intensity Groups**

<b>High ICT Intensity</b>	<b>Medium ICT Intensity</b>	<b>Low ICT Intensity</b>
Finland	Austria	Australia
Hungary	Canada	Belgium
Ireland	Denmark	Czech Republic
Korea	France	Germany
Sweden	Greece	New Zealand
United Kingdom	Iceland	Poland
United States	<b>Italy</b>	Portugal
	Japan	Spain
	Mexico	<b>Turkey</b>
	Netherlands	
	Norway	
	Switzerland	

*Source:* OECD 2000

In spite of the aforementioned Italy's strong points, the country lags behind other countries in Europe and the US in using the Internet because of the low PC penetration which at least in the southern part of Italy result of poor economic conditions, and high unemployment. Italy is hardly being the gate of e-commerce. Italians may never catch up to their English neighbors who have the language and geographic advantages of being the bridge from the US to Europe (Oxford business group 2003). The Italian ICT market is estimated to have a growth by (12.8%) in 2000. In 2004 there were 1,437,511 Internet hosts and almost 18.5 million users (CIA 2005).

### **3.2. The Natural Stone Sector**

Natural stone is a general term employed to cover all types of rock of whatever origin found in the earth's crust. In buildings, dressed and polished stone is usually employed. Stones with deliberately produced rough surfaces are used in vertical surfaces (interior or exterior), in floor covering, on the steps of stairways and for decorative purposes. The types of building stone used in various types of construction are:

- √ Uncut (raw) stone
- √ Random cut stone
- √ Fragmented and sifted stone (aggregate)
- √ Dimensional blocks
- √ Processed stone, cut and shaped in the form of slabs or tiles

The most commonly used term in the natural stone sector is marble. In the commercial sense, the term marble is applied to material of whatever type of origin (sediment, magmatic or metamorphic) which can provide blocks consistent with accepted standards and, when cut and polished, display characteristics compatible with the criteria for facing stone. According to this definition, sedimentary rocks such as travertine, sandstone; metamorphic material such as gneiss, marble and quartzite, and magmatic rocks such as granite, syenite and serpentine are classified as marble. According to the scientific definition, the term marble is applied to metamorphosed limestone produced by a process of recrystallization. The chemical composition of marbles, mostly made up of calcite crystals, is calcium carbonate-dolomite. Marbles also contains small quantities of silicium dioxide and metal oxides that supply color.

At the beginning of the 19<sup>th</sup> century, the production and trade in natural stone began to spread from Europe to other countries. In 1926, 1.5 million tons of stone were produced in a total of 42 countries. Almost (40%) of the total was produced in Italy and another (40%) in Belgium, France, the US, Germany and the UK (Stone 2003). In 2003, the annual global production of natural stone blocks has risen to 75 million tones. Almost (50%) of this consists of marble and other colored stones, (40%) of granite and other hard

stones and (10%) of travertine and onyxes. The share of Turkey was 6 million tons (8% of the world stone production). China, Italy, Spain, and India represent almost (50%) of the world stone production (TUMMER 2004).

Countries in the Alps-Himalaya zone, such as Portugal, Spain, Italy, Greece, Turkey, Iran, and Pakistan, contain very large reserves of carbonates such as marble, limestone and onyx. Table (3.8) shows the distribution of the world natural stone production in 2002 based on colors.

**Table 3.8. World Stone Production with Respect to Colors**

	<b>Color</b>	<b>%</b>	<b>Million (tons)</b>	<b>Million (meter square)</b>
1.	Gray	43.1	17.1	317
2.	Beige	13.8	5.5	102
3.	White	9.7	3.8	72
4.	Pink	6.8	2.7	50
5.	Yellow	5.2	2	38
6.	Red	4.2	1.7	31
7.	Brown	4.1	1.6	30
8.	Black	2	0.8	15
9.	Green	1.5	0.6	11
10.	Blue	1	0.4	7
11.	Other	8.6	3.4	63
	<b>Total</b>	<b>100</b>	<b>24.5</b>	<b>736</b>

*Source:* TUMMER 2004

Gray takes the first place with a (43%) share while beige is in the second place with (13.8%) and the white color is the third in rank with (9.7%) share. These colors make up (66.5%) of the total natural stone production in the world (TUMMER 2004). Table (3.9) shows the world consumption distribution and share per country. The data shows that China, Italy, Germany, the US and Spain represent (41%) of the world consumption.

**Table 3.9. World Consumption Distribution**

<b>Countries</b>	<b>Quantities</b>	<b>Shares</b>	<b>sq mt x 100</b>
China	61.310	10.3%	5,4
Italy	58.130	9.8%	101,1
Germany	43.920	7.4%	53,5
United States	41.920	7.0%	15,7
Spain	39.330	6.6%	100,1
Japan	33.360	5.6%	26,5
India	26.880	4.5%	2,9
France	24.510	4.1%	42,3
Greece	15.120	2.5%	146,8
Saudi Arabia	13.890	2.3%	72,7
Turkey	9.270	1.6%	14,6

*Source:* Marble and More 2005

Table (3.10) presents the total world imports and export of the natural stone in 2000. It is noticed that the unvalued added products (marble and granite blocks and slabs) represent the major proportion of the world import and export.

**Table 3.10. World Import and Export of the Year (2000)**

<b>No</b>	<b>Type</b>	<b>Import (tons)</b>	<b>Export (tons)</b>
1	Marble Block/ Slabs	368.079	769.428
2	Granite Block/ Slabs	1.830.143	131.102
3	Marble Processing	52.649	1.437.698
4	Granite Processing	47.097	1.033.465
5	Other Slate Processing	54.683	231.079
6	Modul Granite	226.690	1.220.852

*Source:* Marble and More 2005

The leading five countries in the world rank of the natural stone exporters in terms of amount as shown in table (3.11) are: China, Italy, India, Spain, and Turkey. Although China takes the first place in the amount of the exports, Italy is the country that takes the largest share in terms of the value. Since China sells cheap merchandise, its place is lower in rank in terms of value of exports despite its leadership in the amount.

**Table 3.11. Countries in the World Natural Stone Exports (2003)**

No	Country	Total (tons)	Block (tons)	Processed (tons)
1.	China	5,700	856	4,844
2.	Italy	3,191	861	2,330
3.	India	2,431	1,950	481
4.	Spain	1,843	896	947
5.	Turkey	1,469	789	680

Source: TUMMER 2004

As well, China leads in imports. Italy holds the second place, keeps buying cheap imports and exporting under its own brand name with the use of its technology. The USA, Germany, Japan, South Korea and Taiwan maintain their positions as significant importers. The imports figures for 2002 are shown in table (3.12).

**Table 3.12. Major Importing Countries (2002)**

No	Country	Total (tons)	Block (tons)	Processed (tons)
1.	China	2,546	2,477	69
2.	Italy	2,170	1,976	194
3.	USA	2,083	453	1,630
4.	Germany	1,186	408	1,453
5.	Japan	1,755	163	1,592

Source: TUMMER 2004

The main usages of the natural stone as shown in table (3.13) are floor tiles (36.5%), tombstones (17.5%) and personal use (13.0%)

**Table 3.13. Area of Use of Natural Stone**

No	Area of Use	Percentage (%)
1.	Floor Tiles	36.5
2.	Outer Wall Covering	7.5
3.	Stair Steps	3.5
4.	Inner Wall Covering	9.5
5.	Personal Use	13.0
6.	Sculptures	10.0
7.	Tombstones	17.5
8.	Other	2.5

Source: TUMMER 2004

Table (3.14) presents the expected world growth of natural stone trade. The data shows that the annual growth rate in 2025 is expected to be five times the rate in 2005.

**Table 3.14. Expected World Growth of Natural Stone Trade**

<b>Years</b>	<b>Gross Product in mill. Sq.mt</b>	<b>Finished Products in mill. Sq.mt</b>	<b>Total in mill. Sq.mt</b>	<b>Annual Growth Rate (%)</b>	<b>Ratios (%)</b>
1996	88,4	171,0	259,4	0.0	84.4
1997	103,7	179,2	282,9	9.1	92.1
1998	96,7	181,7	278,4	-1.6	90.6
1999	111,5	195,8	307,3	10.4	100.0
2000	120,6	212,0	332,6	8.2	108.2
2005	179,2	315,1	494,3	9.7	160.9
2010	266,4	468,4	734,8	9.7	239.1
2015	396,1	696,2	1092,3	9.7	355.5
2020	588,8	1034,8	1623,6	9.7	528.3
2025	874,7	1538,3	2413,0	9.7	785.2
<b>Average annual growth rate</b>				<b>8.3%</b>	

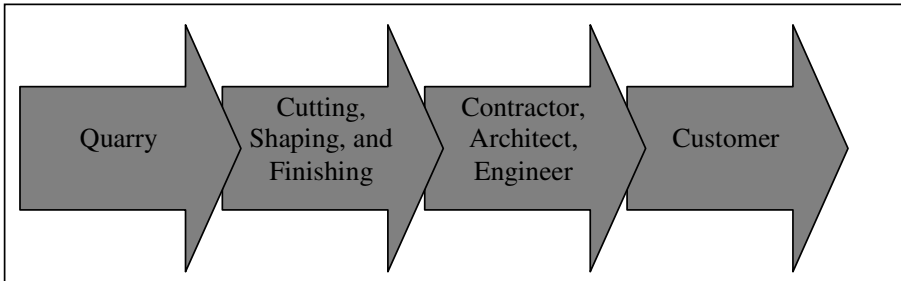
*Source:* Marble and More 2005

One of the most positive developments of the natural stone industry is its growing popularity in major projects (airports, hospitals...). At the same time, more and more raw materials are appearing everywhere, but the production of many quarries is sometimes too small to be able to offer the materials for big projects. Additionally, while the production in the natural stone has increased dramatically in the last decade, the decline in prices has also been impressive. However, the emergence of Spain in the last ten years has been an important phenomenon in the natural stone industry. The Spanish companies were the biggest buyers for the modern machinery, and they constantly invested in better production facilities. Also, China started to export granite stones and tiles all over the world at unbeatable prices. Moreover, India, Egypt and some Eastern European countries are expanding their activities and becoming international actors. Italy holds the international leadership in stone machinery and technology.

Stone refining starts in a quarry. The first huge stone blocks are quarried from a rock. After those big stone blocks are disengaged from rocks, they are subdivided into smaller

pieces (cubes). These cubes are raw material for the stone refining industry. Most used working techniques are cutting, sawing, splitting, turning stone on the lathe and smoothing. The contractor will take delivery of the cut stones and work with the engineer, architect and laborers to construct the building. Architects and engineers have the most direct connection with the end customer as shown in figure (3.1).

**Figure 3.1. The Natural Stone Industry Chain**



The granite and marble products are widely used in different application in the construction industry. They are used for both internal and external applications due to their desirable properties and nice natural coloring. Today, the market offers the first continuous electronically controlled lines for cutting blocks and subsequent operations to fabricate and polish tiles. Additionally, cutting machines, equipped with computerized controllers are progressively more common in stone processing shops. Technology now makes it possible to link different gang saws together with a computerized production control system in which every processing stage is controlled by remote computers. Gang saws equipped with this new technology can operate 24 hours a day, including holidays, without requiring operator supervision.

### **3.2.1. The Jordanian Natural Stone Sector**

Stone has been widely used in building in Jordan since pre-historic times. It has evolved from being a load bearing construction material to one that is merely used for cladding buildings and therefore serves aesthetic purposes. Although each historical cultural period reflects individual building techniques, there are many traditions in the cutting and processing of stone that have been carried on from antiquity to the present day. The industry structure of the stone sector is dominated by small enterprises. The stone sector is mainly composed of 600 small companies, generating employment for about 4,200 with an annual turnover of some US\$60 million. The Jordanian firms mainly export to Israel, US, Saudi Arabia and the Persian Gulf Countries. However, there are interesting sources of stone material in Jordan, such as the Beige Ajloun and Hallabat, the Grey Karak Limestone, and the Jordan Valley Travertine. These kinds of stone are highly demanded in the US, Europe and East Asia but the Jordanians are facing the problem of not having sufficient quantities to export in huge volumes.

A variety of different stone formations can be found in Jordan that includes types such as limestone, granite, sandstone and basalt. Until now, limestone is the most quarried and used type of stone in Jordan. It is found in different parts of the country in a variety of color ranges: white, yellow, gray, brown and red. It is also exported to other countries in the region, either as a raw material or as a finished, cut and dressed product. Additionally, some buildings in Jordan have employed stone brought from Palestine, which includes some of the best known quarries in the region.

As for the Jordanian quarries, nowadays limestone is being quarried in the areas of Ma'an, Ajlun, Irbid, al-Azraq, and the desert plains. The quarries of Ma'an, located in the southern part of Jordan, are famous for their white hard limestone, which is classified as a first grade stone, due to its hardness, purity and low porosity. Additionally, some of the quarries of Ma'an produce another type of limestone that is of lower quality and has a darker beige color and yellow veins. Ajlun, in the north of Jordan, has white limestone quarries of high strength, while the quarries of Irbid produce white and reddish colored limestone in addition to black volcanic rock. The "desert stone" is a white and reddish

limestone that comes from the area of al-Azraq east of Amman, along the edge of the desert areas. Finally, the quarries found in the area of Salt near Amman produce soft limestone in white and yellow colors.

Table (3.15) presents the production of the natural stone during the years (2000 – 2004) in Jordan.

**Table 3.15 Jordan – Production of Natural Stone**

<b>Type</b>		<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
Dimension, worked	Thousand meters	3508	7000	10000	13578	6560
Gravel and Crushed Rock	Thousands cubic meters	10381	11000	13000	14266	14900
Limestone	Thousands cubic meters	8000	8400	9600	9500	9500
Marble	Cubic meters	21575	21000	21000	20685	27650

In Jordan, there are different programs and institutions that support the natural stone sector. In 1992, Jordan established a non-profit organization called Jordan Stone and Tile Exporters Association (JOSTONE). The primary objective of the JOSTONE is to enhance the export capabilities of the sector and to help create export opportunities for its members, specifically in non-traditional markets. As well, the UNIDO program helped many stone firms working in the natural stone financially by investing in the latest technology, giving them the opportunity to become well equipped with the latest technologies and machinery, as well as the ability to meet international standards and specifications. The UNIDO program has a good impact on importing advanced processing equipment from Europe. The data shows that processing equipment utilized by the Jordanian firms imported from Europe has had a positive trend over the past 10 years with a 250% increase in the production (JMOP 2003).

### **3.2.2. The Turkish Natural Stone Sector**

Marble, the word itself deriving from the name of Marmara Island where ancient marble quarries first took place about 2000 years ago, has recently become the locomotive of the mining industry with the rapid development. Marmara Island and Afyon were the capitals of marble production and exports in Roman, Byzantine, and Ottoman periods.

Turkey is known to possess five different types of rock formation capable of yielding stone blocks and of being cut and polished. These are marbles, limestones, magmatic rocks, travertines, and carbonate alabasters (onyx). Research carried out in Turkey has established the existence of a reserve of over 5 billion cubic meters of marble and colored natural stone, a large part of which is located in western Anatolia. Almost 75% of total production is obtained from quarries in the provinces of Denizil, Mugla, Balikesir, Bilecik, Afyon, Bursa, Burdur and Eskisehir.

Inappropriate regulations, administrative and bureaucratic applications hindered the production of stones for years in Turkey. The rapid rise in stone block production in Turkey began in the 1980s. The removal in 1986 of stone block from the context of the obsolete "Quarries Regulations" and its inclusion under "Mining Law" gave confidence that allowed the investors to plan ahead. In the second half of the 1990s production of stone in Turkey rose from 15<sup>th</sup> in the world to the 7<sup>th</sup>. Turkey's production was exceeded only by three European countries (Italy, Spain and Portugal) and three non-European countries (China, India and Brazil).

Turkey is a major producer of barite, boron minerals, celestite, emery, feldspar, limestone, magnesite, marble, perlite, and pumice. A wide variety of primary metallic minerals were produced as well. Turkey is a major world producer of processed mineral commodities, which included refined borates and related chemicals, cement, ceramics, and glass. Turkey is one of the world's most important natural stone and marble producers. There are more than 500 quarries, 800 factories and around 1000 workshops in the sector (TUMMER 2004). With the Mining Law, long-term security was provided to invest in quarries and define the industry as priority sector for investments. This leads

to a major contribution in the fast development of the industry in recent years (Turkish Time 2003). With the modern quarry production methods that are recently being applied and with the latest techniques, Turkey has become one of the seven big producing countries in the world natural stone production (TUMMER 2004).

The natural stone production of the country jumped from 600 thousand tons in 1986 to 6 million tons in 2003. Turkey's share in the world natural stone production in 2003 is 8% in terms of amount, but (3%) to (3.5%) in terms of value. Marble plants used to be seen in Afyon, whereas now they are spotted all over Turkey (TUMMER 2004). United States, Israel, Spain, and Saudi Arabia seem to be the most significant purchasers of processed marble while the main purchasers of block marble are China, Syria and Greece. The leading purchasers of the processed travertine are the US, the UK and Saudi Arabia while the main purchasers of block travertine are Spain, the US, China and Italy.

Exports of natural stone, which had attained a value of USD 223.5 million in 2001, rose by (36%) in 2002 to USD303 million. In general, the leading importing country is the USA, followed by Saudi Arabia, the Aegean Free Zone, China, Spain, Italy and Hong Kong. The total value of rough slabs and processed, generally hard type stone, imported from abroad is around USD 40-50 million. The most important natural stone block importing countries are Spain, Italy, Norway, Brazil, South Africa, India, Ukraine, Zimbabwe and Portugal.

### **3.2.3. The Italian Natural Stone Sector**

Italy has been a significant producer, exporter and importer of minerals. In terms of world production, the country is a significant producer of cement, crude steel and dimension stone. Private and public companies own facilities for the mining and processing of minerals and mineral products. Some enterprises are under state control for economic reasons such as to maintain employment.

China, Italy, Turkey, Spain, India, Brazil and Portugal make up approximately 70% of the world natural stone production. Italy alone held (22%) of the world natural stone production in 1995, but its share dropped to 12% in 2002 (TUMMER 2004). The gap is filled by China and Turkey. The major markets for the Italian marble products are the USA and Saudi Arabia. The major market for the Italian granite is Germany and the USA. Most of the creative innovations introduced into the sector have been initiated in Italy, where they have rapidly spread to other parts of the world. White Carrara marble and Travertine have their own strong brand identity, and have a well-known name. Other important geographic area of producing white marble area in Lombardy, the Po Valley, Puglia, Sicily Island, and Verona. Vincenza are important colored-marble producing areas. During the last years, the Italian exports have suffered most from the decline in the North America and Europe. The drop in exports to Germany and the US has made a strong negative mark on the overall national statistics (IMM Carrara 2005).

Among stone working equipment manufacturers, Italy maintains its world leadership as expected, although its share of the world market dropped in the face of competition from other producer countries in Europe and elsewhere. Most companies are located in northern Italy (77% of turnover), especially in the provinces of the Veneto. The average annual growth in turnover of these companies was higher than (10%) over the last five years. Looking at the breakdown of the turnover figures in a sector by machinery type, about (70%) of turnover is generated by stone working equipment and a little over (7%) by machinery for quarries, while the remaining (22%) comes from the production of other capital goods (tools, handling equipment, parts, etc.).

In Italy, the MARMOMACCHINE Club Association is the most active association for promoting the natural stone. This association was found in 1984 as a technical organization open to the entire marble sector and those connected to it. In 1997, the name has been modified to Associazione Italiana MARMOMACCHINE. Currently has several hundred members, ten of them are other associations and their consortiums. In order to promote the sector worldwide, the Italian MARMOMACCHINE Association sponsors promotional and technical commissions. The Association works in total independence at its headquarters, conducting research in its own studies centers which is also home to the

International Marble Institute (I.S.I.M). The Association's members are represented in almost fifteen international fairs and the Association works directly with the Italian Foreign Trade Institute (I.C.E) in annually defining promotional programs for sectors of specific interest in the sphere of building and instrumental machines.

Table (3.16) shows the production of natural stone in Italy during the years (1997 – 2001).

**Table 3.16. Italian Production of Natural Stone (1997 – 2001) in Metric Tons**

<b>Type</b>			<b>97</b>	<b>98</b>	<b>99</b>	<b>00</b>	<b>01</b>
Calcareous							
	Alabaster		25	25	25	25	25
	Marble in Blocks						
		White	100	100	100	100	100
		Colored	3000	3000	3000	3000	3000
		Travertine	2500	2500	2500	2500	2500
	Other						
		Granite	100	100	100	100	100
		Sandstone	1800	1800	1800	1800	1800
Crushed and Broken							
	Dolomite		760	711	700	700	700
	Limestone		1200 00	1200 00	1200 00	1200 00	1200 00
	Marl for Cement		1500 0	1500 0	1500 0	1400 0	1400 0
	Serpentine		1500	1500	1500	1500	1500

*Source:* U.S. Geological Survey Minerals Year Book

### **3.3. Summary**

This chapter presents the profile of Jordan, Turkey and Italy in addition to the natural stone sector in the three countries. In Jordan, the government has liberalized the trade regime sufficiently to secure Jordan's membership in the WTO (2000), the free trade accord with the US (2000), and the association agreement with the EU (2001). These measures have helped improve productivity and put Jordan on the foreign investment map. Jordan has taken some major steps in the last few years towards creating a dynamic and practical approach to be a part of the international ICT sector. The most significant step toward a realistic goal in developing the ICT is the creation of the REACH initiative.

Turkey's dynamic economy is a complex mix of modern industry and commerce along with a traditional agriculture sector that in 2001 accounted for (40%) of the employment (CIA 2005). It has a strong and rapidly growing private sector, yet the state still plays a major role in basic industry, banking, transport, and communication. In recent years the economic situation has been marked by erratic economic growth and serious imbalances. Real Gross National Product (GNP) growth has exceeded (6%) in many years, but this strong expansion has been interrupted by sharp declines in output in 1994, 1999, and 2001. Inflation in 2004 fell to (9.3%). Perhaps because of these problems, foreign direct investment in Turkey remains low. A major political and economic issue over the next decade is whether or not Turkey will become a member of the EU. The ICT sector is one of the fastest growing sectors in Turkey. Its share in the GDP reached (1.6%) in 2000 (CIA 2004).

In Italy, the capitalistic economy remains divided into a developed industrial north, dominated by private companies, and a less developed, welfare-dependent agricultural south, with (20%) unemployment. However, in most cases, the cost of labor and high social security contributions make it difficult for enterprises to create new employment. The Italian industry is characterized by its particular model based on districts and on flexible specialization. Efficiency and flexibility are not resulting from the presence of a great number of enterprises but most of all from the way they join and work all together.

Research and Development (R&D) budget in Italy is insufficient (1.4% of the GNP) and not very productive. In addition, Italy's low Internet usage lags behind other European countries because of the low computers penetration which at least in the south region results from poor economic conditions and high unemployment. Therefore, the question is how it has been possible that during the last decade poor regions in Italy could be numbered among the most developed industrial areas in the world. The explanation could be the high level of industrial culture and know-how in the country. In addition, most of machine tools are manufactured within the district whose main production is obtained by using the machine itself.

The international stone industry is a sector enjoying growth all over the world. The driving force of the sector is the international trade. The majority of world consumption comes from material that is quarried in different countries than those where it is eventually installed. The leading producers are China, Italy, Spain and India that account for 50% of world quarrying production. However, prices on the main markets were down on average, confirming a long-term trend caused by the rapid technological development and the trade modifications that benefit the most popular materials.

## **CHAPTER FOUR**

### **RESEARCH METHODOLOGY**

Although all research activities are presented in a sequence, some have been performed simultaneously in order to save time. First, the chosen topic, "The Competitive Advantage of Small and Medium Sized Enterprises: The Case of Jordan's Natural Stone Industry", has been explored. An academic and business literature search was conducted to capture the domain of each potential construct adequately. As part of the literature review, books, journal articles, tertiary literature such as indexes and catalogues, company minutes, government surveys, CD-ROM in university libraries, Internet sites, chambers of commerce surveys and professional association surveys have been used.

A combination of the quantitative and qualitative methods is used employing both qualitative and quantitative data and offering an opportunity in order not only to test the hypotheses but also to explore deeply into the issues raised by the research questions (Saunders et al. 2000). The multi-method design enables triangulation to take place.

This chapter gives an overview of the research method used. A presentation of the sample demographic is discussed in section 4.1. Section 4.2 follows with the quantitative research method and section 4.3 covers the qualitative research method. A brief summary of the chapter is presented in section 4.4.

#### **4.1 Sample Demographic**

The area random sampling is used<sup>17</sup>. The population has been divided into three strata based on the geographical distribution (Jordan, Turkey and Italy). A random sample is then drawn from each of the strata. Dividing the population into a series of relevant strata means that the sample is more likely to be representative, and each of the strata is represented proportionally within the sample (figure 4.1). The total population is the sum of all the SMEs working in processing the natural stone sector in Jordan, Turkey and Italy. The total number of the firms is 2864 firms; 240 firms in Jordan, 784 firms in Turkey and 1840 firms in Italy.

**Figure 4.1. Population Fraction**

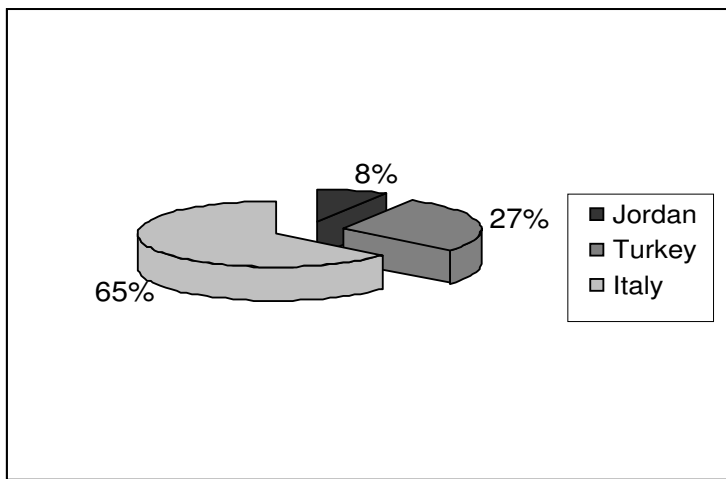


Table (4.1) presents the sampling frame of Jordan, Turkey and Italy. Number of workers is the criteria for selecting the firms in the sample. The three countries (Jordan, Turkey, and Italy) follow the EU criteria; 10-250 workers.

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<sup>17</sup> The choice of sampling techniques is dependent on the feasibility and sensibility of collecting data to answer the research questions and to address the objectives from the entire population. The five main techniques are: simple random, systematic, stratified random, cluster, and multi-stage.

**Table 4.1. Sampling Frame for Jordan, Turkey and Italy**

#	Country	Population	Criteria (Workers)	Source
1	Jordan	240	10-250	JMOP, 2005 JMOIT 2005 Amman Chamber of Industry, 2003
2	Turkey	784	10-250	Turkish Time Sectors, 2003 <a href="http://www.turkishtime.org/sector_1/10_eng.asp">www.turkishtime.org/sector_1/10_eng.asp</a> TUMMER <a href="http://www.TUMMER.org.tr">www.TUMMER.org.tr</a>
3	Italy	1840	10-250	Associazione Italiana MARMOMACCHINE, 2003 <a href="http://www.assomarmomacchine.com">www.assomarmomacchine.com</a> Rome Chamber of Commerce, 2004
	<b>Total</b>	<b>2864</b>		

Table (4.2) presents the minimum sample size for each country<sup>18</sup>. The calculation assumes that the data will be collected from all cases in the sample and is based on (Saunders 2000):

- ✓ The level of confidence in the estimate
- ✓ The margin of error that can be tolerated
- ✓ The proportion of responses that are expected to have some particular attributes

The minimum sample size (n) =  $p\% \times q\% \times \left[ \frac{z}{e\%} \right]^2$

Where n is the minimum sample size required

p% is the proportion belonging to the specified category

q% is the proportion not belonging to the specified category

z is the z value corresponding to the level of confidence required

e% is the margin of error required

<sup>18</sup> Factors such as the confidence that is needed in the findings, accuracy required and likely categories for analyses will affect the size of the sample that needs to be collected.

The adjusted sample size  $\bar{n}$  is calculated<sup>19</sup> as: 
$$\frac{n}{1 + \left[ \frac{n}{N} \right]}$$

Where  $\bar{n}$  is the adjusted minimum sample size  
n is the minimum sample size  
N is the total population

As an example, the minimum sample for Jordan = 50% x 50% x  $\left[ \frac{1.96}{5\%} \right]^2 = 384.16$

While the adjusted sample size  $\bar{n} = \frac{384.16}{1 + \left[ \frac{384.16}{240} \right]} = 148$

**Table 4.2. Sampling Size**

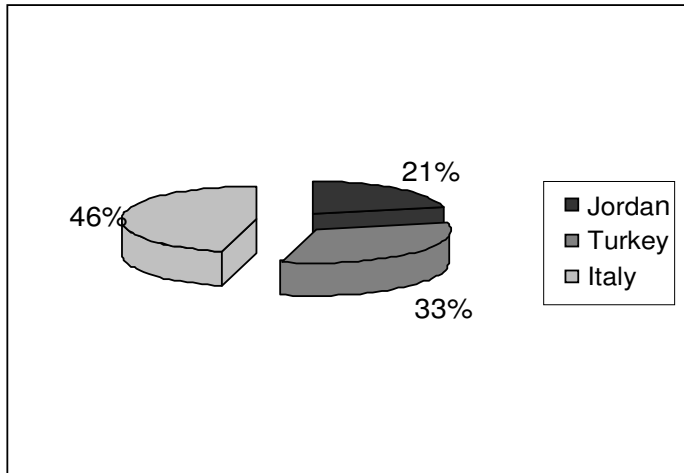
Country	Population	Adjusted Sample Size	Received	
			N	%
Jordan	240	148	140	94.5
Turkey	784	258	213	82.5
Italy	1840	320	299	93.5
<b>Total</b>	<b>2864</b>	<b>726</b>	<b>652</b>	<b>89.8</b>

\*The estimated level of confidence = 95% (z = 1.96)  
\*The estimated margin or error that can be tolerated = 5%  
\* The estimated proportion of responses = 50% (estimated by the Jordanian Ministry of Planning in Jordan, TUMMER in Turkey and Associazione Italiana MARMOMACCHINE in Italy).

Figure (4.2) shows that the Jordanian sample presents (21%) of the total sample size, while the Turkish sample presents (33%) and the Italian sample presents (46%).

<sup>19</sup> Because of the small total population (less than 10,000) we only need the minimum sample size. However, this assumes a response rate of 100 percent (Saunders et al 2000).

**Figure 4.2. Sample Fraction (Received)**



The Chamber of Commerce in Amman provided the researcher with a list of the Jordanian companies' names and their addresses. The interview survey was conducted by the researcher in cooperation with the Competitiveness Team in the Jordanian Ministry of Planning. By using the Statistical Package for the Social Sciences (SPSS), the sample random method has been used to select 148 SMEs. The structured interviews have been used during the period from February to March 2006. The number of the questionnaires collected is 140. The same questionnaire has been distributed to the SMEs working in the natural stone sector during the period from September 2003 to December 2003. In the first cycle the total population was 220 SMEs and only 62 questionnaires have been collected.

In Turkey, the questionnaire has been sent to 258 SMEs by fax or via e-mail in September 2004. The Turkish Association of Marble, Natural Stone and Machinery Products (TUMMER), Izmir Marble Producers Association, and the Turkish Embassy in Tel Aviv, Israel, provided the names and addresses of the companies to the researcher. Many telephone calls and reminder faxes have been sent to these firms. Unfortunately, by the end of the year few firms returned the questionnaires back. Two university business-

students<sup>20</sup> from Ankara were asked by the researcher to follow up and collect the questionnaires. By the end of December 2005, 213 questionnaires were collected. The researcher visited different associations during his visit to Turkey from 28/3/2004 till 10/4/2004. In addition, the researcher attended the International Marble Fair in Izmir during that period and visited different associations as mentioned in table (5.5).

In Turkey, almost (95%) of the natural stone industry is concentrated in Marmara, Aegean regions, Mediterranean, Central Western Anatolia and Central Anatolia. According to TUMMER (2004), there are 2500 operations in Turkey and almost 800 firms are small to medium sized enterprises and the rest are either large-scale enterprises or workshops. The random sample method is used to select 258 firms out of 784. The survey covered different provinces such as Balikesir, Bursa, Kirklareli, Afyon, Aydin, Izmir, Mulga, Kutahya, Ankara, Eskisehir, Kirsehir and Nigde, Adana, and Burdur.

In Italy, the questionnaire has been sent by fax or via the e-mail to 320 SMEs during September 2004. These firms have been selected randomly by using the SPSS. Names and addresses of these firms have been prepared with the help of the Associazione Italiana MARMOMACCHINE, Rome Chamber of Commerce, and Italian Consulate in Jerusalem, Israel. Many telephone calls and reminder faxes have been sent to these firms. Few firms returned back the questionnaires by the end of the year. The researcher asked a Palestinian businessman, who holds a BA in Business Administration<sup>21</sup> and owns a representative office for stone and marble in Verona, Italy, to follow up and collect back the questionnaires. By the end of December 2005, 299 questionnaires were returned back. During May 2004, the researcher managed to visit different associations in Italy that are listed in table (5.5).

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<sup>20</sup> The two university students were working under the supervision of Ms. Sercil Tokoglu who holds an MBA from Maastricht School of Management, the Netherlands in 1997.

<sup>21</sup> The name of the businessman is Mr. Fahed Gaith. Mr. Gaith was an undergraduate student in Hebron University where the researcher was teaching as a part-timer.

## **4.2. Quantitative Research Method**

The purpose of this survey is descriptive-exploratory with some explanatory analysis. Surveys are frequently conducted for the purpose of making descriptive assertions about the population that is discovering the distribution of certain traits or attributes (Babbie 1990). Some advantages of the survey design are the cheap economy of this design, the rapid turn around in data collection, and the ability to identify attributes of a population from a small group of individuals. The data collected by the survey method may not be wide ranging as those collected by qualitative research methods; since there is a limit to the number of questions (Babbie 1990).

### **4.2.1. Structured Interviews**

The questionnaire<sup>22</sup> consists of four parts: Part one covers the different elements of Porter's diamond and Porter's five forces, part two covers the different scenarios of the generic strategies, and part three covers the impact of the ICT while part four cover the SMEs' profile. Four-language questionnaires have been prepared (English, Arabic, Italian and Turkish). The English version (Appendix A-1) has been translated into Arabic (Appendix A-2) by the researcher and evaluated by the Competitiveness Team at the Jordanian Ministry of Planning and another team from the Natural Resources Authority in Jordan, since asking experts to comment on the questionnaire helped in establishing content validity (Saunders et al. 2000).

A qualified translator has been asked to translate the questionnaire from Arabic into Italian (Appendix A-3), and the English version has been sent to an Italian staff member at Maastricht School of Management, the Netherlands to translate the English version into Italian then the two versions of the Italian translations have been reviewed by an Italian industrial expert working with an EU project for developing the stone and marble

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<sup>22</sup> Questionnaires can be used for descriptive or explanatory research. Descriptive research identifies and describes the variability in different phenomena. While the explanatory research enables to examine and explain relationships.

sector in Palestine. Almost the same process has been done with the Turkish version (Appendix A-4). A Turkish doctorate student in the USA has been asked to translate the English version into Turkish and a Ph.D. student at Maastricht University, the Netherlands has been asked to review the Turkish version. Furthermore, the Turkish version has been sent to TUMMER in order to send their comments and feedback before distributing the questionnaires.

In order to link the variables with the research questions and items on the survey, table (4.3) shows how the variables relate to the survey instrument.

**Table 4.3. The Link between the Variables and the Questionnaire**

<b>Variables</b>	<b>Research Question</b>	<b>Item on Survey</b>
Competitive elements	Research Questions # 1,2,3	See Question: 1, 2,3,4,8
Impact of the ICT	Research Questions # 4	See Questions: 5, 6, 7, 8

#### **4.2.2. Pre-test Phase**

A convenience sampling was used to collect data during the piloting. At the beginning, the sample has been selected from the population and then a pre-test-study sample has been selected from the remainder of the population. A pre-test study of 5 firms from Jordan in conformity with the present criteria for small and medium sized enterprises was conducted. The purpose of the pre-test was to refine the questionnaire so that respondents have no problems in answering the questions, and in reporting and recording the data (Saunders et al. 2000; Babbie 1990). In addition, it enabled the researcher to obtain an overall assessment to the question's validity of the data that has been collected.

All of the research questions have been answered based on the data of the pre-test-study sample except the question of measuring the performance indicator. Initially, the researcher suggested the use of profit, cost, productivity, and debt to equity ratio, the ability to meet interest payments, and cash flow in terms of liquidity status and market share as measures for competitiveness (Feurer and Chaharbaghi 1994). Any performance indicator that entailed enquiring about exact monetary values was completely rejected by

the managers/ owners. A monetary measure was not possible either due to the respondents' inability or to unwillingness to offer such data. In general, the pre-test phase proved satisfying in terms of the ways to improve upon the questionnaire and to interview guide and in terms of asking the appropriate questions on the way to testing the hypothesis and reflecting upon the research questions.

#### **4.2.3. Analyzing Quantitative Data**

The Kruskal-Wallis Test is the non-parametric alternative to a one-way between-groups analysis of variance. It allows comparing the scores on some continuous variables for three or more groups. Scores are converted to ranks and the mean rank for each group is compared (Anderson, Sweeney and Williams 1999). The non-parametric Kruskal-Wallis test was used since it does not ask for the assumptions of normality and equal variances that are required by the parametric analysis of variance procedure. Using the Levene Test, Appendix (B-2) shows that there are significant differences in the variances in the different components between the three countries.<sup>23</sup> Although the sample size is more than (30) in the three countries, the normality test shows that some of the diagrams are skewed to the right or to the left, such as the diamond diagram in the three countries, balanced scored card, and the ICT impact diagram as shown in (Appendix B-1).

It was noticed that the significant differences between the three countries is referred to the Italian figures i.e. the developed country. Thus, the Mann-Whiney Test is used to testify the significant differences between Jordan and Turkey. This technique is used to test the differences between two independent groups on a continuous measure (Anderson, Sweeney and Williams 1999). This test is the non-parametric alternative to the t-test for independent samples. Instead of comparing means of the two groups as in the case of the t-test, the Mann-Whitney Test compares medians. It converts the scores on the continuous variable to ranks, across the two groups. Then it evaluates whether the ranks

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<sup>23</sup> Levene's test is used to test if k samples have equal variances. Equal variances across samples are called homogeneity of variance (Anderson, Sweeney and Williams 1999). The deviation around the median in each group was found. The larger the deviations in one group compared to other groups, the more the spread and more likely that the variability are different.

for the two groups differ significantly. As well, the Mann-Whitney Test is used to test whether there is a significant difference between the different variables in Jordan in the first round in 2003 and the second round in 2006 or not.

#### 4.2.4. Reliability and Validity

Validity is concerned with whether the findings are really about what they appear to be about or not (Saunders et al 2000). There are many threats to validity such as: history, testing, instrumentation, morality, maturation, and ambiguity about causal direction. For the quantitative analysis, confirmatory factor analysis was undertaken to test the consistency of each construct (see Appendix B-3). Confirmatory factor analysis (CFA) seeks to determine if the number of factors and the loadings of measured (indicator) variables on them conform to what is expected on the basis of pre-established theory. The indicator variables are selected on the basis of prior theory, and the factor analysis is used to see if they load as predicted on the expected number of factors (Anderson, Sweeney and Williams 1999). All of the data show that the CFA is more than 0.5 which means that there is an internal consistency of each construct (Saunders et al 2000).

This was followed by the reliability test<sup>24</sup> Cronbach's  $\alpha$ . Cronbach Alpha formula was used to calculate the internal reliability of the tests as shown in table (4.4). Alpha gained in total degree is (0.9169). The value is above 0.7, so the scale can be considered reliable with the sample (Saunders et al. 2000). The reliability for Jordan is 0.6541, while the reliabilities for Turkey and Italy are 0.8216 and 0.8070 respectively.

**Table 4.4. Reliability (Cronbach Alpha)**

Country	No. of Cases	No. of Items	Alpha
Jordan	140	55	0.6541
Turkey	213	55	0.8216
Italy	299	55	0.8070
Total	652	55	0.9169

<sup>24</sup> There are three common approaches for assessing reliability: test re-test, internal consistency, and alternative form. Cronbach's alpha is method for calculating internal consistency that measures the consistency of responses across either all questions or a sub-group of questions.

It is noticed that the value of the Cronbach Alpha in Jordan is less than Turkey and Italy. That could be explained by different reasons. The average inter-item correlation is low. This result could be due to the educational and cultural background. A second reason is size of the sample; the sample size in Jordan is smaller than the sample size in Turkey and Italy<sup>25</sup>.

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<sup>25</sup> Cronbach's alpha can be written as a function of the number of test items and the average inter-correlation among the items. formula for the standardized Cronbach's alpha:

$$\alpha = \frac{N \cdot \bar{r}}{1 + (N - 1) \cdot \bar{r}}$$

Here N is equal to the number of items and r-bar is the average inter-item correlation among the items. One can see from this formula that if you increase the number of items, you increase Cronbach's alpha. Additionally, if the average inter-item correlation is low, alpha will be low. As the average inter-item correlation increases, Cronbach's alpha increases as well.

### **4.3 Qualitative Research Method**

An in-depth examination of ten SMEs working in the natural stone-processing sector in Jordan has been conducted during the year 2003. Appendix (B-4) presents the background of each firm. The ten SMEs in the sample were selected as ones that have their own web sites with some spread across size ranges, location, and networking activity. The non-probability sampling<sup>26</sup> was used in selecting these SMEs. The ten firms were selected in cooperation with the Jordanian Ministry of Planning. The researcher interviewed firms from the Jordanian market for two reasons: first, the scope of the study is encompasses the competitive advantage of the Jordanian SMEs and second, the researcher finds cultural and communication difficulties in conducting such an interview in Turkey and Italy.

During the semi-structured interviews, a list of themes and questions, as a protocol, (appendix B-5) has been covered. The protocol is a major tactic in increasing the reliability and is intended to guide the investigator in carrying out the semi-structured interview (Yin 1994). These themes and questions varied from interview to interview (Saunders et al. 2000). Face-to-face one-hour meeting with the interviewee was carried out. The researcher personally administered all the interviews. The data was covered by note-taking. Evidence has been collected from six sources: company documents, archival records, interviews, direct observation, participant observation, and physical artifacts. Data analysis consists of examining, categorizing, tabulating or recombining the evidence and then interpreting the data to address the initial propositions of the study.

In addition to the ten Jordanian SMEs, different authorities, organizations and ministries were also interviewed in Jordan, Turkey and Italy. During the semi-structured interviews, there is a list of themes and questions (see appendix B-6) to be covered. The main purpose of these interviews was to gain deep understanding of the context of the research.

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<sup>26</sup> Non probability sampling provides a range of alternative techniques based on the subjective judgment. Some of the techniques of non-probability sampling are: quota, purposive, snowball, self-selection, and convenience.

The interviews have been organized with representatives of the institutes listed in the table 4.5.

**Table 4.5. List of Institutes Visited**

<b>Institute</b>	<b>Country</b>	<b>Date</b>	<b>Note</b>
Ministry of Planning	Jordan	2003-present	Competitiveness Team
Ministry of Industry and Trade	Jordan	March 20 2006	Competitiveness Directorate - Manager
Ministry of Industry and Trade	Jordan	Jan. 12 2003	SMEs Unit Coordinator
Amman Chamber of Commerce	Jordan	Jan. 13 2003	Computer and Database Unit
Natural Planning Authority	Jordan	Jan. 14 2003	Geological department
Central Bureau of Statistics	Jordan	Jan. 15 2003	Public Relations Manager
Jordan-United States Business Partnership	Jordan	Jan. 16 2003	Financial manager
UNIDO – IPU	Jordan	Jan. 19 2003	Project Manager
JOSTONE	Jordan	Jan. 20 2003	Manager
State Institute of Statistics	Turkey	March 30 2004	Public Relations Manager
Izmir Chamber of Commerce	Turkey	March 30 2004	Public Relations manager
TUMMER	Turkey	April 1 2004	Deputy Manager
Small and Medium Industry development Organization (KOSGEB)	Turkey	April 5 2004	Izmir Enterprise Development Center
Technology Development Center of KOSGEB	Turkey	April 5 2004	Izmir Enterprise Development Center
Enterprise Development Center of KOSGEB	Turkey	April 5 2004	Izmir Enterprise Development Center
Associazione Italiana MARMOMACCHINE	Italy	May 5 2004	Studies Center
Rome Chamber of Commerce	Italy	May 6 2004	Public Relations
Crafts and SMEs Association of Vicenza Province	Italy	July 20 2004	SMEs Coordinator
National Statistical Institute	Italy	May 7 2004	Statistics Department

#### **4.4. Non-Response and Tendency to Respond Differently**

The researcher was cautious in creating standard questions during the interviews in the three countries. The researcher was focusing on this issue during the training he delivered to the survey team and during the few interviews he joined in Turkey and Italy. The lack of standardization in the interviews may lead to concerns about the reliability of the output (Saunders et al 2000). The concern about reliability is related to the issues of bias. That is why the interviewers were asked not to impose their beliefs or interpret responses.

In order to reduce the non-response rate, the researcher reviewed carefully the eligibility (i.e. number of the employees) of the firms before starting the field work. As well, the researcher reviewed all of the updated contacts (telephone number, fax number, address, e-mail address-if any, contact person) of the firms in the sample size in order to avoid unreachable respondents. Mainly, the reason for non-response is that few respondents refused to be involved in the research without giving a reason.

In Jordan, we see that the non-response rate is relatively low (5.5%) in comparison with Turkey and Italy for different reasons:

- √ A pre-test sampling was conducted. A questionnaire has been distributed to five firms in order to refine the questionnaire so that respondents have no problems in answering the questions.
- √ A survey was conducted in 2003. The non-response rate in the first cycle was too high. The number of questionnaires received was 62 out of 140 that have been distributed. The respondents involved in the 2006 survey and those who have been involved in the 2003 survey were familiar with the questionnaire.
- √ The survey was conducted by the researcher. The researcher was cautious to visit the respondents in appropriate times (i.e. the researcher used to phone the contact person to arrange for the face-to-face interview).
- √ The assistance of the Competitiveness Team – Ministry of Planning. Porter mentioned in the introduction of his book "The Competitive Advantage of Nations" that he has been working in a regional economic plan in the Middle

East, involving national teams from Egypt, Israel, Jordan, and the Palestinian Authority. The National Competitiveness Team provided the researcher with the list of the respondents and all of the necessary information about the natural stone sector in Jordan.

In Italy, the non-response rate is (6.5%) is lower than the rate in Turkey for three main reasons:

- √ The essential conditions for conducting the survey were available. All of the statistics are accessible; most of the firms were concentrated in specific regions; and it was not very difficult to arrange for face-to-face meetings with the respondents)
- √ Training received by the survey team. During his visit to Italy, the researcher delivered a two-day intensive training to the survey team. The researcher discussed with them objective of the research, questionnaire, and collecting primary data using questioners. The survey team in Italy consisted of five persons; all of them hold Bachelor degrees and working in the natural stone sector.

The non-response rate in Turkey is (17.5%). This percentage is relatively high for two reasons:

- √ The survey team in Turkey faced many difficulties in delivering and collecting the questionnaires. The firms are scattered; and it was not easy to arrange meetings with the respondents.
- √ The survey team consisted of two university students. Although the researcher delivered two-day training to the survey team, the team did not manage to convince all of the respondents to fill in the questionnaire.

The researcher was cautious in avoiding any intended possibility for the respondents in the three countries to respond differently. The following points may explain how:

- √ Language. Using native languages in their countries reduces the opportunity to respond differently due to any language misunderstandings.
- √ Survey team. Conducting the survey with natives avoids many cultural misunderstanding.
- √ Experts. Using native translators for the questionnaires avoids many cultural misinterpretations.
- √ Types of the questions. The researcher was cautious with the type of questions used in the questionnaire. The researcher avoided open-ended questions. Also, he avoided any cultural or behavioral questions.
- √ The training delivered by the researcher to the survey team in Turkey and Italy might help in avoiding many misunderstandings by the team that may lead to a tendency to respond differently.

#### **4.5. Summary**

The data collection started with the gathering of the secondary data by doing literature research. First, a pre-test was conducted in order to test the validity of the developed constructs. After revising the questionnaire, the data were collected from Jordan, Turkey and Italy for the analysis of the given hypotheses.

In Jordan, the Chamber of Commerce in Amman has prepared a list of all the companies' names and their addresses with the help of the Ministry of Planning. The interview survey was conducted by the researcher in cooperation with the Competitiveness Team in the Jordanian Ministry of Planning. In Turkey, the Turkish Association of Marble, Natural Stone and Machinery Products (TUMMER), Izmir Marble Producers Association and the Turkish Embassy in Tel Aviv, Israel, have prepared the names and addresses of the companies. In Italy, the names and addresses of the firms have been prepared with the help of the Associazione Italiana MARMOMACCHINE, Rome Chamber of Commerce and Italian Consulate in Jerusalem, Israel.

The questionnaire was developed in four languages: English, Arabic, Turkish and Italian. Hence, a careful translation method was used. Moreover, the scale items were tested in terms of reliability and validity to examine the consistency of the constructs and related items. In addition to the survey method, semi-structured interviews were conducted with ten SMEs working in the natural stone in Jordan and other related and supporting organizations and ministries in Jordan, Turkey and Italy.

## **CHAPTER FIVE**

### **FINDINGS AND DISCUSSION**

Based on the survey method described in chapter four, 652 questionnaires were received from Jordan, Turkey and Italy. The questionnaire consists of four parts. The non-parametric Kruskal-Wallis Test was used to testify the significant differences for the first third and fourth hypotheses between the three countries (Jordan, Turkey and Italy). Also, the non-parametric Mann-Whiney Test was used to testify the significant differences between Jordan and Turkey as well to testify the significant differences between the first and second surveys in Jordan. For the second hypothesis, the one way ANOVA was used.

The interviewees were asked about the balanced scored card (innovation, customer's satisfaction, internal business and financial performance) of their firms as an indication of their competitiveness. It was measured on a five-point scale (very negative to very positive). As well, the respondents were asked to select the type of generic strategy they are implementing. Also, the respondents were asked whether or not they are using the computer and the Internet and the purposes of using them on a yes/ no basis. The expected benefits of using the Internet was measured on a five-point scale where 1= less important and 5= more important. Furthermore, the respondents were asked to evaluate the different elements of Porter's diamond and Porter's five forces. These elements were also measured on a five-point scale (1 = very negative and 5 = very positive). The mean, standard deviation, minimum values, maximum values, and skewness for all of the above mentioned statistics are described in appendix G.

Section 5.1 discusses the hypothesis pertaining to the factors of competitive advantage. These factors consist of the factor conditions, demand conditions, related and supporting industries, and the five forces. The Kruskal-Wallis test was used to testify this hypothesis.

*The null hypothesis (  $H_0$  ):*

There are no significant differences in the competitive factors confronting the SMEs working in processing the natural stone sector between Jordan, Turkey and Italy.

The test statistic computed from ranks determined from the pooled sample observations. The null hypothesis is that the rank assigned has an equal chance of being any number between 1 and 28, regardless of the sample group to which it belongs. The null hypothesis is tested by using the chi-square distribution at  $\alpha=0.05$  (for more details, please see appendix F-2).

The statistics from the chambers of commerce and the Ministry of Industry and Trade show that the owners of the firms prefer to work individually or in partnership rather than to register as a company. Thus, the following hypothesis testifies whether the individual relationship preferences are the reason behind that or not. Section 5.2 discusses the legal form of the SMEs working in the natural stone sector in Jordan. The one-way analysis of variance was used to testify this hypothesis (please see appendix F-1).

*The null hypothesis (  $H_0$  ):*

Jordanians are not creating companies in the natural stone sector because of individual relationship preferences.

This hypothesis could be testified by examining whether there are significant differences between the three legal forms of the SMEs working in the natural stone sector in Jordan (individual, partnership, and companies) for each individual relationship preferences or not.

Section 5.3 discusses the influence of the generic strategies on the competitive advantage (innovation, financial performance, customer satisfaction, and internal businesses) of the SMEs working in processing the natural stone sectors in the three countries. The Kruskal-Wallis test was used to testify this hypothesis.

*The null hypothesis (  $H_0$  ):*

There are no significant differences in the influence of the different scenarios of the generic strategies on the competitive advantage of the SMEs working in processing the natural stone sector in Jordan, Turkey and Italy.

The test statistic computed from ranks determined from the pooled sample observations. The null hypothesis is that the rank assigned has an equal chance of being any number between 1 and 8, regardless of the sample group to which it belongs. The null hypothesis is tested by using the chi-square distribution at  $\alpha=0.05$  (for more details, please see appendix F-2).

As mentioned earlier, introducing the ICT may have a positive or negative impact on the performance of the firms. Section 5.4 discusses the impact of the ICT on the elements of competitiveness. This hypothesis testifies whether or not there is any significant difference in the impact of the ICT on different competitive elements such as delivery time, cost, innovation, and flexibility between Jordan, Turkey and Italy. The Kruskal-Wallis test was used to testify this hypothesis.

*The null hypothesis (  $H_0$  ):*

There are no significant differences in the impact of the ICT on the competitive elements of the SMEs working in processing the natural stone sector between Jordan, Turkey and Italy.

The test statistic computed from ranks determined from the pooled sample observations. The null hypothesis is that the rank assigned has an equal chance of being any number between 1 and 14, regardless of the sample group to which it belongs. The null hypothesis is tested by using the chi-square distribution at  $\alpha=0.05$  (for more details, please see appendix F-2).

Section 5.5 discusses the SWOT analysis of the SMEs working in the natural stone sector. A comparison of labor productivity is presented is discussed in section 5.6 while section 5.7 discusses the cross-cultural comparability of measurement and section 5.8 discusses the recommended policy options. These policy options could be implemented at three levels as shown in section 5.9. Section 5.10 discusses the economic development of the natural stone sector in Jordan and section 5.11 summarizes the main findings.

### **5.1. Competitive Factors Confronting the SMEs Working in Processing the Natural Stone Sector (Jordan, Turkey and Italy)**

This section discusses the competitive factors considered by Porter (1979, 1980, 1985, and 1990). In particular, it discusses the five competitive forces in addition to the three conditions of Porter's diamond: the factor conditions, demand conditions, and related and supporting industries. The fourth condition of Porter's diamond "Firm's strategy, structure, and rivalry" is also analyzed. Rivalry is discussed as an element of the five competitive forces, while strategy is analyzed by asking the interviewees to select the most appropriate strategy (cost leadership, differentiation, focus) to their firms. Structure of the industry is not included in the questionnaire since this study is focusing on small and medium sized enterprises in Jordan, Turkey and Italy.

In order to test whether there is a significant difference between the three countries or not, the acceptance and rejection regions are determined by finding the value of Chi square at  $\alpha = 0.05$  and for two degrees of freedom (number of countries- 1) which is 5.991 (this figure is found in the Chi square distribution- statistics reference). Therefore, the limit of accepting or rejecting the hypothesis depends on the tabulated Chi square value. If the calculated Chi square is lower than the tabulated Chi square (the value is 5.991 in our case) then there is a significant difference and the hypothesis is rejected. As well, this result is assured by looking at the value of the significance (if the value is less than or equals to 0.05, then there is a significant difference, and the hypothesis is rejected). Appendix D-1 presents the mean rank of each element in the three countries, appendix D-2 presents the differences between Jordan and Turkey, and appendix D-3 presents the differences between the first survey in 2003 and the second survey in 2006 in Jordan.

### 5.1.1. Factor Conditions

The respondents in the three countries were asked to assess each component of the factor conditions (Porter 1990). The respondents have been asked to evaluate the acquisition of capital, acquisition of information, political and economic situation, rules and regulations, infrastructure availability, infrastructure cost, consistency of raw material, technical qualifications and market accessibility. Table (5.1) shows the significant differences in all of the factor conditions between the three countries. As well, the data shows that there is a significant difference between Jordan and Turkey in the political and economic situation for the advantage of Jordan while there is no significant difference in the market accessibility between these two countries.

**Table 5.1. Kruskal-Wallis Test – Factor Conditions**

No	Variable	Chi-Square	Sig
١	Acquiring capital	218.155	.00*
٢	Acquiring information	297.268	.00*
٣	Political and economic uncertainties	8.140	.01*
٤	Bureaucratic rules and regulations	208.088	.00*
٥	Infrastructure availability	283.763	.00*
٦	Infrastructure costs	159.591	.00*
٧	Inconsistent raw material quality	185.654	.04*
٨	Technical qualifications	266.576	.00*
٩	The market accessibility	59.571	.00*

\* Significant (values are less than or equal 0.05) with DF = 2

Jordan has the lowest rank in comparison with Turkey and Italy in acquiring capital, availability of information, bureaucratic rules and regulations, infrastructure availability, infrastructure cost, providing consistent stones in huge quantities, and availability of technical qualifications. Turkey has the lowest rank in the stability of economic and political environment, and market accessibility.

The above result shows that the Jordanians have to improve the weak elements in order to develop the factor conditions and thus improve the opportunity to have a competitive

natural stone industry. In order to deeply analysis this results, the factor conditions in Jordan are grouped as follows:

### *Human Resources*

The survey shows that Jordan has a lower rank, in comparison with Turkey and Italy, in the availability of technical qualifications. The majority of the labor force is unskilled workers who came mainly from Egypt and start working without receiving any training in advance. Although those working in the natural stone sector in Jordan are paid more than the workers in other sectors, the labor cost per hour (on average \$2 per hour) which is very close to the rate in Turkey is less than the labor cost per hour in other countries such as Italy (on average \$25 per hour).

Thus, there is a need to invest more on the human resources by providing training and counseling to the people who are working in the technical and management issues. The technical people need to be aware of the efficient methods of production, technical specifications, material handling and extracting techniques. As well, the Jordanian SMEs are less active in adopting modern management practices. The reason could be the management failure in the sense of resistance to change or inadequate training in such practices. The management people need to be aware of strategic planning, and marketing and purchasing techniques.

### *Physical Resources*

The data shows that Jordan has a lower rank in the availability of infrastructure, and the ability to provide high volumes of natural stones with a consistent quality. Thus, the Jordanian government needs to upgrade the general infrastructure (roads, telecommunications, etc.) and to focus more on the specialized infrastructure that is related to the natural stone sector such as water recycling, technical specifications, extracting techniques, etc. On the other hand, the Jordanian firms need to benefit from the advantage in the cost of infrastructure.

The Jordanian natural stone firms are suffering from the inconsistency of raw material (there is a variation in the color and specifications of the natural stone that is extracted from the same location). As a result, the Jordanian firms are facing difficulties in fulfilling large orders for two reasons. The sizes of the quarries in Jordan are small ones, and the inconsistency in color and specifications comes from the natural factors such as earthquakes. This disadvantage may put a pressure on the Jordanian firms to innovate new methods for extracting and cutting the natural stone, as well as producing differentiated products to niche markets rather than competing with low cost products. Improving the competitive advantage of the natural stone sector in Jordan depends on how efficiently and effectively the natural stone are deployed. There is a need to use the appropriate technology and methods in extracting the blocks and cutting these blocks into slabs.

### *Knowledge Resources*

The data shows that there is a lack in acquiring information regarding the local and international demand. Furthermore, there is an unclear picture of the nature of foreign markets to the businessmen in Jordan. This is due to the shortage of feasibility studies and knowledge of the regulations and standards in other markets. As well, the practical orientation, that would teach how to cope with new technological developments, remains weak in Jordan.

The level of innovation is still too low in Jordan due to the weaknesses in the public sector R&D spending, and in the overall skill base of the natural stone firms' labor force. Another explanation is the intuitional structure and lagging financing the university and public research sector. Low university R&D spending and low levels of university interactions with firms are factors that directly affect firms' incentives to invest in R&D. Thus, promoting a cluster organization and university-linked networking institutions often play a particularly important role in the diffusion of new management best practice.

## *Capital Resources*

The Jordanian firms are facing difficulties in acquiring capital. Family businesses, most of the times, prefer to stay small and prefer not to bring in any external partner to their firms. As well, many banks might lack the knowledge and experience of dealing with small loans. However, in terms of capital assets, the lower investment rate in Jordan is consistent with the Jordanian's low capital productivity and the Jordanian's history of relatively high macroeconomic volatility and the bureaucratic rules and regulations.

### **5.1.2. Demand Conditions**

Table (5.2) shows the significant differences, between the three countries, in the local and international demand, image of the stone, and the awareness and sophistication of the customers. The data shows that Jordan has a lower rank, in comparison with Turkey and Italy, in all of the demand conditions except in the local demand.

**Table 5.2. Kruskal-Wallis Test – Demand Conditions**

<b>No</b>	<b>Variable</b>	<b>Chi-Square</b>	<b>Sig</b>
١	Local demand	146.752	.00*
٢	International demand	314.393	.00*
٣	Product image	71.151	.00*
٤	Customer awareness	71.930	.00*
٥	Customers sophistication	56.021	.00*

\* Significant (values are less than or equal 0.05) with DF = 2

Three attributes of home demand are significant (Porter 1990): the composition of home demand, the size and pattern of growth of home demand, and the mechanisms by which a nation's domestic preferences are transmitted to foreign markets.

### *Home Demand Composition*

The composition of home demand shapes how firms perceive, interpret, and respond to buyer needs. In Jordan, there are two main segments in the natural stone sector: the luxury segment for building villas, and the commercial segment for constructing commercial buildings. Most of the local firms are focusing on the largest segment that is the commercial one. Unfortunately most of these firms are competing with each others based on low prices by cutting part of their profit margins. Still the size of this segment is not large enough that the SMEs might benefit from the concept of economies of scale. Therefore, the Jordanian SMEs need to understand better and act on buyer needs in their home market and tend to be more confident in doing so. To do so, there is a need to open communication channels between the firms and their buyers.

Another important issue is the nature of home buyers. A nation's firms gain competitive advantage if the domestic buyers are sophisticated (Porter 1990). Unfortunately, the majority of buyers in the commercial segment in Jordan are not so sophisticated. That is why these unsophisticated buyers do not put pressure on local firms to meet high standards in terms of product quality, features and service. On the other hand, the luxury segment buyers are highly sophisticated ones and most of them prefer to buy foreign products especially from Italy.

### *Demand Size and Pattern of Growth*

The home demand in Jordan is promising for different reasons. Some of these reasons are:

- √ The limited local demand in Jordan may be strengthened by forcing firms to export.
- √ The existence of a large number of small independent buyers in Jordan creates a better environment for innovation, and expands the pool of market information.
- √ The high rate of growth of home demand and the rapid domestic growth lead a nation's firms to adopt new technologies faster, and to build large and efficient facilities.

### *Internationalization*

Even though, Jordan has signed different agreements with the EU, the US and Israel and entered the WTO; still the Jordanian firms do not benefit much from these agreements. The international demand and the image of Jordan's product in international markets are still weak. Thus, there is a need to improve the image of the Jordanian natural stone product and increase the local and international demand. As an example this could be achieved by participating in international fairs, creating a specialized website for the natural stone, publishing a specialized magazine, and conducting a promotional campaign locally and internationally.

#### **5.1.3. Related and Supporting Industries**

Related and supporting industries measure the presence or absence of related and supporting industries that are internationally competitive. The presence of internationally competitive supplier industries in a nation creates advantages in downstream industries. That could be achieved by providing efficient and rapid access to the most cost-effective inputs. Moreover, close working relationships between suppliers and firms help firms perceive new methods and opportunities to apply new technologies and to gain quick access to information and new ideas.

Related industries are those in which firms can coordinate or share activities in the value chain. Creating an efficient network can affect the competitiveness of the SMEs by increasing their productivity, and deriving the direction and pace of innovation. Working within a network allows the SMEs to benefit as if they had greater scale or as if they had merged together without requiring them to sacrifice their flexibility.

As shown in table (5.3), there are significant differences in the relations with banks, insurance firms, research centers and universities, local manufacturers, public institutes, government, stone cutting firms, and firms working in other sectors. Jordan has the lowest rank, in comparison with Turkey and Italy, in all of the abovementioned elements

except in the supplier-buyer relationship. Italy has the lowest rank in supplier-buyer relations while there is no significant difference between Jordan and Turkey in this element.

**Table 5.3. Kruskal-Wallis Test – Related and Supporting Industries**

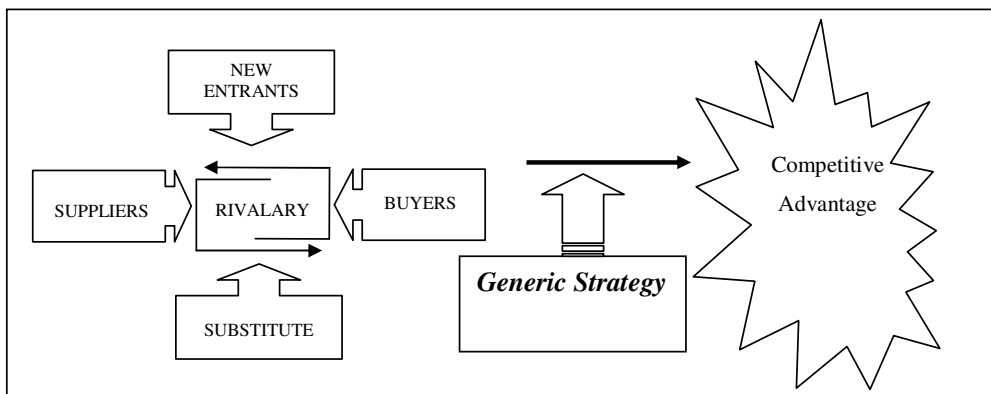
No	Variable	Chi-Square	Sig
١	Supplier buyer relations	5.602	.06
٢	Relation with banks	319.617	.00*
٣	Relation with insurance firms	213.065	.00*
٤	Relation with research centers and universities	293.138	.00*
٥	Relation with local manufacturers	168.449	.00*
٦	Relation with public institutes	121.022	.00*
٧	Relation with government	198.089	.00*
٨	Relation with stone cutting firms	173.409	.00*
9	Relation with firms from other sectors	261.05	.00*

\* Significant (values are less than or equal 0.05) with DF = 2

#### 5.1.4 Porter’s Five Forces Model (Jordan, Turkey and Italy)

This section discusses the five competitive forces of the SMEs working in processing the natural stone in Jordan, Turkey and Italy. Furthermore, it discusses the generic strategies that are implemented by these SMEs. Figure (5.1) links the different components of Porter’s model (the independent variable is the five forces, dependent variable is the competitive advantage and mediator is the generic strategy).

**Figure 5.1. Porter’s Model of Five Forces**



In order to build a competitive advantage, owner/ manager of the SMEs need to understand the macro and micro-economic conditions in addition to the natural stone industry structure that are represented by the five competitive forces. Then the owner/ manager need to position his firms by applying a generic strategy.

Each respondent has been asked to assess the threat of each competitive force. Table (5.4) shows that there are significant differences in intensity of rivals, power of buyers, power of suppliers, threat of substitutes and threat of new entrants. Jordan has a higher threat, in comparison with Turkey and Italy, in all of the five competitive forces except the threats of substitutes. It means that the natural stone industry in Jordan is a less profitable one in comparison with Turkey and Italy (please see figure 5.2).

**Table 5.4. Kruskal-Wallis Test – Five Competitive Forces**

No	Variable	Chi-Square	Sig.
١	Intensity of rivals	122.524	.00*
٢	Power of buyers	123.860	.00*
٣	Power of suppliers	134.721	.00*
٤	Threat of substitutes	99.090	.00*
٥	Threat of entry	7.023	.03*

\* Significant (values are less than or equal 0.05) with DF = 2

### *Intensity of Rivals*

Although there is a relatively high industry growth, Jordan has a higher rank in the threat of rivalry in comparison with Turkey and Italy. The size of the local market is limited, most of the existing firms are competing within the same segment (commercial one), and the exit barriers in Jordan are relatively high (please note table 6.10).

### *Power of Buyers and Suppliers*

Jordan has a higher threat of buyers in comparison with Turkey and Italy. As mentioned earlier, most of the firms in Jordan are competing within the commercial segment, and the main buyers of this segment are construction companies. It means that the buyers are concentrated and fully informed about the natural stone sector. As well, Jordan has the

highest threat of suppliers since there is a high danger of forward integration; owners of the quarries starting up their own stone cutting firms while the backward integration is less dangerous; starting up a quarry in Jordan consumes time and cost.

### *Threats of Substitutes*

Jordan has a lower rank in threats of substitute in comparison with Turkey and Italy. In 1990s, there were unsuccessful trials for marketing an industrial stone<sup>27</sup> in Jordan by a manufacturing Lebanese firm. It did not succeed for two reasons. The people in Jordan and the countries in the region resisted the idea of building their houses from an industrial material due to psychological fears, and the prices of the industrial stone were not significantly lower than the natural one. However, the difficult economic situation in Jordan may force many Jordanians to look for substitutes of the natural stone such as bricks and cement for building their houses especially in the rural areas.

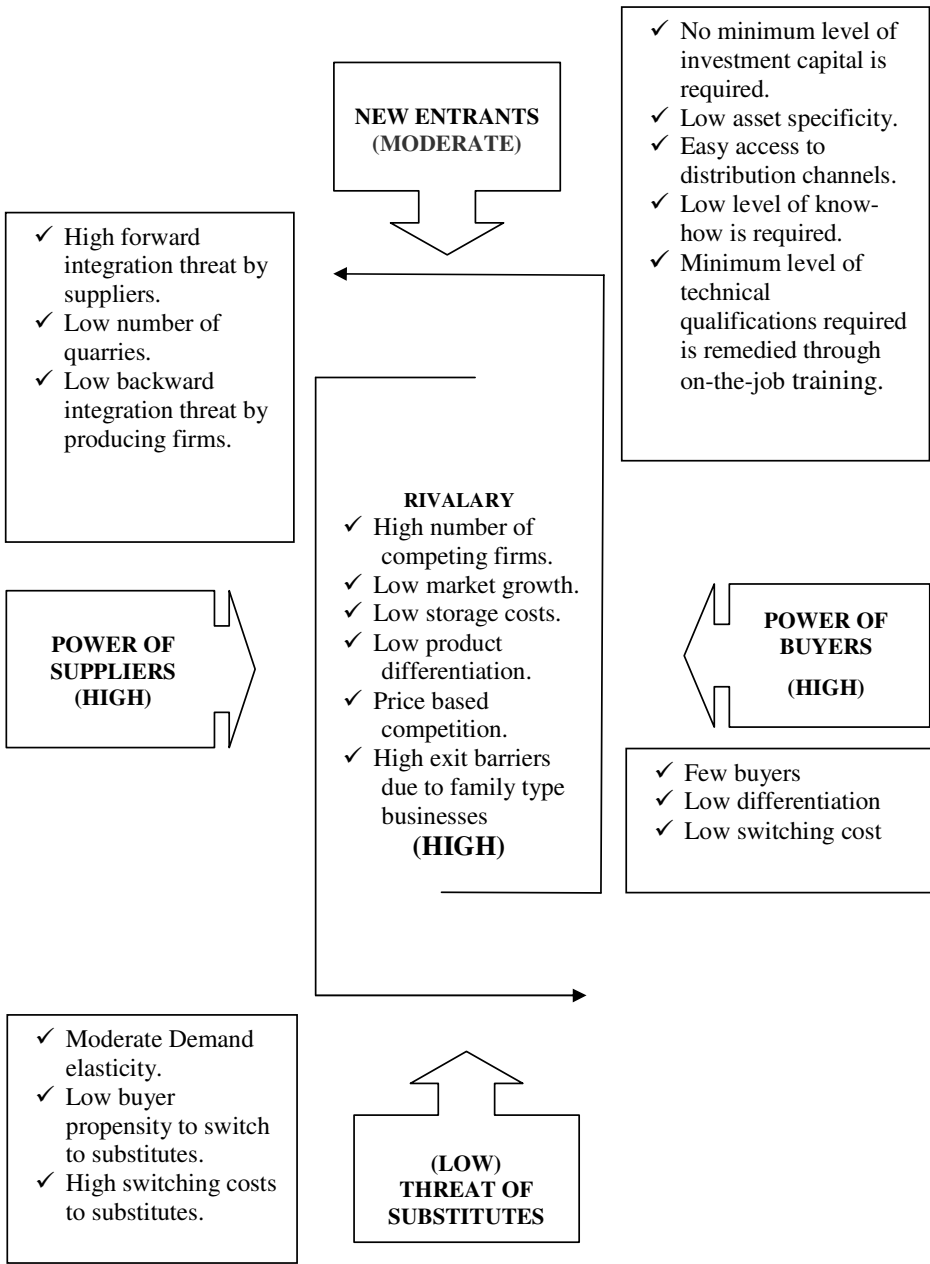
### *Threat of New Entrants*

Jordan has the highest threat of new entrants for many reasons. The economies of scale do not represent an obstacle for entering new entrants. Besides, there are no government restrictions to start up new firms in Jordan, switching cost to a new entrant is low, the volume of investment to start up a new firm is not so high, and there is no brand identity in Jordan preventing new firms to enter.

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<sup>27</sup> Industrial stone is manufactured by processing the mud after adding some additives. The technical specifications of this product fulfills the technical specifications.

**Figure 5.2. The Industry Structure of the Natural Stone SMEs in Jordan**



Porter (1985) shows that the higher the power of buyers and suppliers, intensity of rivals, threat of new entrants and threat of substitutes, the lower the overall profit potential in the industry because new entrants bring new capacity and seek market share by pushing down margins. Powerful buyers and suppliers bargain away the profits for themselves. The presence of substitute products limits the price competitors and can charge without inducing substitution and eroding industry volume. Intense competitive rivalry erodes profits by requiring higher costs of competing or by passing on profits to customers in the form of lower prices.

On the other hand, Porter (1990) argues that the presence of domestic rivalry is an essential incentive for the creation and the sustainability of competitive advantage. A number of domestic competitors is not itself sufficient to determine success. If there is no effective rivalry among competitors, the advantages of domestic rivalry are nullified. Domestic rivalry not only creates advantages but helps to avoid some disadvantages. For example, with a group of domestic rivals following various competitive strategies, there is a check against forms of government intervention that stifle innovation.

#### **5.1.5. Balanced Scored Card**

The Balanced Scored Card is a mean to implement organizational strategy. In the Balanced Scored Card, strategy is translated in a set of critical success factors, which are translated into one or more performance measures. In that manner strategy turns into operational objectives and measures (Kaplan and Norton 1992). The four categories for Balanced Score Cad are: financial performance, customer knowledge, internal business processes, and learning and growth.

Table (5.5) presents results of the balanced scored card. The results of the survey show that there are significant differences in the financial indicators, innovation, customer satisfaction and internal businesses between the three countries. The Jordanian SMEs have a lower rank, in comparison with Turkey and Italy, in all of the elements of the four perspectives of the balanced scored card. This is not a surprising result since the factor

conditions, demand conditions, and related and supporting industries are relatively poor in Jordan in comparison with Turkey and Italy. In addition, the threats of the five competitive forces are relatively high and the SMEs themselves do not have a structured mode of setting suitable strategies.

**Table 5.5. Kruskal-Wallis Test – Balanced Scored Card**

No	Variable	Chi-Square	Sig.
<b>Innovation</b>			
1	Percentage of new products of total turnover	99.022	.00*
2	Time necessary to develop new generation of products	127.736	.00*
<b>Customer Satisfaction</b>			
3	Customer satisfaction	65.958	.00*
4	Market share	68.368	.00*
5	Customer loyalty	56.521	.00*
<b>Internal Business</b>			
6	Employees satisfaction	15.915	.00*
7	Employees loyalty	9.541	.00*
8	Productivity of your employees	26.114	.00*
<b>Profitability</b>			
9	Return on Investment	74.837	.00*
10	Profitability	152.963	.00*
11	Revenue growth	134.545	.00*
12	Cost reduction	9.724	.00*
13	Exportation	141.214	.00*

\* Significant (values are less than or equal 0.05) with DF= 2

### *Innovation*

Innovation perspective is a measure of potential future performance. Adequate investment in this area is critical to all long-term success. However, innovation should be taken in its broad definition and not limited to creating a new product. Innovation could be creating new methods in production, purchasing, selling... etc. To achieve that, there should be adequate investment in the human and infrastructure and the government should start creating the environment that is necessary for innovation.

### *Customer Perspective*

The data shows that the satisfaction of the customers, retention ratio, and market share are low in Jordan. The Jordanian SMEs lack the competitive elements such as the lowest prices, highest quality, fast delivery time, and flexibility in production. Understanding this perspective may help the owners of the SMEs to assess their clients' happiness and to make needs clear.

### *Internal Business*

The result of the survey shows that the efficiency of the manufacturing process is relatively low (The manufacturing cycle time, employee's productivity, employees' satisfaction, and employees' loyalty are all low). The family business could be one reason for this result since most of the employees are hired based on relatively-basis criteria rather than qualifications. However, most of the businesses in Turkey and Italy are family ones as well. Another reason could be the old machinery and production methods the Jordanian SMEs are using.

### *Financial Perspective*

Jordan has the lowest rank in the financial perspective. As a result of the limited market size, old machinery and production methods, and employees' low productivity, the cost per unit is high. That leads to a reduction in the revenue, profit growth, and exportation.

The aforementioned analysis of data shows that there are significant differences in all of the competitive factors confronting the SMEs working in the natural stone sector between Jordan, Turkey and Italy.

***The findings rejected the first hypothesis. The analysis of data showed that there are significant differences in all of the competitive factors confronting the SMEs working in the natural stone sector between Jordan, Turkey and Italy.***

Jordan, in general, has the lowest rank in comparison with Turkey and Italy. Thus, there is a need to upgrade the competitive factors confronting the SMEs working in the natural stone sector in Jordan. Chapter five discusses all of the competitive factors, the SWOT analysis of the sector, and comes up with six conclusions: updating and simplifying the laws and regulations, upgrading the advanced and specialized infrastructure, promoting the entrepreneurship and upgrading personnel, establishing credit institutions to support the SMEs, promoting e-business in the natural stone industry, and building a dynamic natural stone cluster. These objectives could be realized at three levels: SMEs-level, government-level, and related and supporting industries-level.

## **5.2. SMEs' Legal Form in Jordan**

This section discusses the legal form of the SMEs working in the natural stone sector in Jordan. Family businesses represent the majority of the respondents in the three countries; (91.7%) in Jordan, (82.3%) of the respondents in Turkey, and (86.4%) of the respondents in Italy. Table (5.6) shows that (70%) of the SMEs working in the natural stone in Jordan is individual businesses while (18.6%) are working as partners firms and (11.4%) are registered as companies. The data also shows that the average number of employees in Jordan is (11) and standard deviation (5.5) while the average number of employees in Turkey is (24) and the standard deviation is (7.9). In Italy, the average number of employees is (28) and the standard deviation is (9.3).

**Table 5.6. Legal Form of SMEs in Jordan**

<b>Country</b>	<b>Individual</b>	<b>Partnership</b>	<b>Company</b>
<b>Jordan</b>	70%	18.6%	11.4%
<b>Italy</b>	26.9%	16%	56.1%
<b>Turkey</b>	38.2%	34.9%	26.9%

The size of the SMEs in the developing countries is determined by different factors. Some of these factors are (OECD 2000e): domestic markets where they operate, access to finance, adopting new technology, reliable infrastructure especially for communications and logistics, and the nature of the business (family or non-family business).

Most of the SMEs in Jordan are one-person businesses. The SMEs and their family represent the majority of the workforce in Jordan. As a result, the informal relationships of the family dominate formal and explicit relationships. Thus, trust, loyalty and family ties are of prime importance to advancing the businesses.

The one-way ANOVA Test is used to testify whether there is a significant difference between the individual relationship preferences<sup>28</sup> and the legal form of the firms or not. The one-way ANOVA, as a parametric test, is used because the conditions for using this

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<sup>28</sup> The elements of individual relationship preferences are the same as related and supporting industries.

kind of tests are achieved (normality and homogeneity). Table (5.7) shows that there are no significant differences between the related and supporting industries and the SMEs' legal form in Jordan. Therefore, there are other reasons, rather than the individual relationship preferences, pushing the firms working in the natural stone industry in Jordan for not creating companies.

**Table 5.7. One-Way ANOVA Test – Companies and Relationship Preferences**

No	Variable		Sum of Squares	Mean Square	F	Sig.
1	Supplier buyer relationships have depended on the family and personal ties	Between Groups Within Groups Total	2.359 98.813 101.171	1.179 0.721	1.635	0.19
2	The relationship with local banks	Between Groups Within Groups Total	1.570 51.823 53.393	0.785 0.378	2.075	0.12
3	The relationship with insurance firms	Between Groups Within Groups Total	0.282 70.654 70.936	0.141 0.516	0.273	0.76
4	The relationship with research and training centers and universities	Between Groups Within Groups Total	1.520 57.365 58.886	0.760 0.419	1.815	0.16
5	The relationship with local manufacturers	Between Groups Within Groups Total	1.983 132.703 134.686	0.991 0.969	1.024	0.36
6	The relationship with public institutes	Between Groups Within Groups Total	1.486 104.649 106.136	0.743 0.764	0.973	0.38
7	The relationship with governmental institutes	Between Groups Within Groups Total	1.830 83.162 84.993	0.915 0.607	1.508	0.22
8	The relationship with stone cutting firms in the same region	Between Groups Within Groups Total	0.328 188.358 188.686	0.164 1.375	0.119	0.48
9	The relationship with firms from other sectors (design/ marketing)	Between Groups Within Groups Total	0.686 64.000 64.686	0.343 0.467	0.734	0.88

\* Significant (values are less than or equal 0.05) with DF = 2 between groups (three legal types – 1), 137 within groups (140 respondents – 2-1), and 139 (140 respondents -1)total.

The abovementioned analysis shows that the individual relationship preferences are not the reasons for preferring the SMEs in Jordan to work as individuals or in partnerships rather than in companies. Thus, the second hypothesis has been rejected.

***The analysis of data rejected the second hypothesis. There are other reasons rather than individual relationship preferences that are pushing most of the SMEs working in the natural stone sector in Jordan to work as individuals or in partnerships and not in companies.***

There is small number of people in Jordan that has the capacity to represent their assets in a manner that makes these assets widely transferable in order to allow them to be encumbered and permits their owners subject to their account and therefore the ability to produce and use capital efficiently. A reason for that could be the laws and regulations that keep these people out of the formal property system. Another reason is due to the cultural and religious background. Most of the people in Jordan are following the Arabic and Islamic way in running their businesses. People hold and use their assets on the basis of myriad disconnected informal agreements. Thus, as long as the assets of these people are not properly documented and tracked by a property bureaucracy, they are invisible and sterile in the marketplace (De Soto 2000).

A large proportion of property in Jordan is not formally registered. This is due to the time and cost of registration. However, complexity leads to uncertainty, increases transactions costs, and offers opportunities for fraud. In addition, longer and more expensive property registration is associated with weaker perceived security of property rights. However, Jordan is doing hard in order to adjust its macro-level, legal business, and foreign investment to fit with the globalization process. Unfortunately, the policymakers in Jordan are concentrating only on policies dealing with the macro-level and they are not inquiring whether people had the means to participate in the open market or not.

The abovementioned analysis leads us to the conclusion that one of the major barriers of creating companies in Jordan could be the complexity of procedures and regulations. To investigate this barrier, a comparative study regarding the rules and regulations of doing business, as shown in table (5.8), has been developed between Jordan, Turkey and Italy. The comparative study covers: starting and closing a business, enforcing contracts, protecting investors, getting credit, registering property, and hiring and firing workers (Doing Business 2005). The four dimensions that measure starting a business are (Doing Business 2005): number of procedure, time, and minimum capital that the entrepreneur must deposit in a bank before registration starts. In each case, a higher number indicates that opening a business is more difficult and that fewer entrepreneurs will do so. As an example, in Jordan, 11 procedures are needed to start up a business and it takes 36 days to issue the necessary permit. In 2003, Turkey reduced the number of procedures up to seven. These procedures are: obtaining a permit from the Ministry of Industry and Trade, making a payment to the consumer's fund, registering at the trade registry, registering for taxes, for social security, at the chamber of commerce, and at the Ministry of Labor, were combined into one, and delegated to the chambers of commerce. Furthermore, application forms were unified and shortened. A new business can be started in a bout a week.

The employment regulations are designed to protect workers from arbitrary, unfair, and discriminatory actions by their employers. These regulations are: minimum wage, overtime work, grounds for dismissal, and severance pay. The dimensions of this indicator are: difficulty of hiring, rigid work hours, difficulty of firing, and cost of firing. Jordan has a fair rank regarding this indicator while Italy has some difficulties in hiring and firing workers. In order to create jobs, Italy abolished the government monopoly on job placement services and introduced job sharing, for 2 workers to share the same job. Furthermore, the number of hours and types of part-time contracts were expanded.

However, improving credit information and laws to create and enforce collateral unity is not just about creditors' rights but also it benefits deserving debtors by increasing their chances to access credit. As well, it boosts productivity and growth by shifting capital to the best business ventures. In Jordan, bankruptcy receives a lot of attention in reform

proposals for improving access to credit. The problem is that most of the collateral enforcement in Jordan takes place outside the bankruptcy.

**Table 5.8. Doing Business (Jordan, Turkey and Italy)**

No	Variable	Jordan	Turkey	Italy
<b>Starting a Business</b>				
1	Number of procedures	11	8	9
2	Time (days)	36	9	13
3	Cost (% of income per capita)	52.0	26.4	16.2
4	Minimum capital (% of income per capita)	1147.7	0.0	11.2
<b>Hiring and Firing Workers</b>				
5	Difficulty of hiring index (0-100)	11	44	61
6	Rigidity of hours index (0-100)	40	80	60
7	Difficulty of firing index (0-100)	50	40	30
8	Rigidity of employment index (0-100)	34	55	50
9	Firing costs (weeks)	90	112	47
<b>Registering Property</b>				
10	Number of procedures	8	8	8
11	Time (days)	22	9	27
12	Cost (% of property value)	10.0	3.3	1.3
<b>Getting Credit</b>				
13	Cost to create collateral (% income per capita)	56.3	19.9	3.7
14	Legal rights of borrowers and lenders (0-10)	6	1	3
15	Credit information index (0-6)	3	4	6
16	Public registry coverage (borrowers/1000 adults)	5	32	79
17	Private bureau coverage (borrowers/1000 adults)	0	300	571
<b>Protecting Investors</b>				
18	Disclosure index (0-7)	3	2	5
<b>Enforcing Contracts</b>				
19	Number of procedures	43	22	18
20	Time (days)	342	330	1390
21	Cost (% of debt)	8.8	12.5	17.6
<b>Closing a Business</b>				
22	Time of insolvency (years)	4.3	2.9	1.2
23	Cost of insolvency (% of estate)	8.0	8.0	18.0
24	Recovery rate (cent on the dollar)	26.7	25.7	43.5

*Source: Doing Business 2005*

Disclosure Index ranging from 0 to 7 reveals that the Jordanian investors enjoy reasonable protections with a score of 3. What investors fear the most is having their money expropriated. Expropriation may be achieved, for example, by selling products or assets at below-market prices. However, there are three dimensions of investor protection: disclosure of ownership and financial information, legal protections of small investors, and enforcement capabilities in the courts or securities regulator (Doing Business 2005). In enforcing contract, Jordan needs, on average, 43 procedures and takes 342 days. However, the fewer procedures, the lower the cost, and the shorter the time to resolve disputes lead to efficiency and integrity of the courts. Furthermore, entrepreneurs become more willing to enter contracts beyond their narrow circle of known business partners. As a result, trade increases and business expands (Doing Business 2005).

In Jordan, business exit works in direct negotiations between creditors and debtors. Secured creditors can seize the assets of defaulted companies without the complex court procedures associated with bankruptcy. As a result, they can recover 26.7 cent for every dollar loaned. However, efficient insolvency helps new entrepreneurs start and grow their businesses. With higher recovery rates, banks are more willing to lend and more money goes to new business ventures (Doing Business 2005).

It is noticed that the cost and capital are the main barriers for doing business in Jordan. For example, table (6.10) shows that there is a need for (52%) of the income per capita and (1147.7%) of income per capita, as a minimum capital, for starting up a business. In addition, there is a need to pay (10%) of property value for registering property. Therefore, there is a need to make things easier by reducing the monetary requirements, saving time and simplifying procedures. Then, the black economy can be cleaned up to enable the owners of the firms to establish legitimate businesses.

### **5.3. Generic Strategies**

Each respondent, in the three countries, was asked to select one choice from the eight-scenarios of the generic strategies. These choices are listed in table (5.9). This table presents the number and percentage of each type of the generic strategies implemented by the SMEs working in the natural stone sector in Jordan, Turkey and Italy.

**Table 5.9. Generic Strategies – Scenarios**

<b>No.</b>	<b>Generic Strategy</b>	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
1	Low cost producer, standard products are offered in a broad market area.	38 27.1%	50 23.5%	17 5.7%	105 16.1%
2	Differentiated products sold at a lowest price offered in a broad market area.	7 5%	28 13.1%	20 6.7%	55 8.4%
3	Few specific market-niches offer standard products at the low cost.	15 10.7%	51 23.9%	29 9.7%	95 14.6%
4	Few market-niches with differentiated products are offered at a price as low as possible.	6 4.3%	23 10.8%	27 9%	56 8.6%
5	Not the lowest cost producer in the sector. The standard products are offered in a broad market area.	32 22.9%	15 7%	44 14.7%	91 14%
6	Differentiated products can be sold at a higher price and offered in a broad market area.	2 1.4%	13 6.1%	47 15.7%	62 9.5%
7	Few specific market-niches and offers standard products but not the low cost producer.	29 20.7%	20 9.4%	23 7.7%	72 11%
8	Few market-niches with differentiated products but not the low cost producer	11 7.9%	13 6.1%	92 30.8%	116 17.8%
	<b>Total</b>	<b>140</b>	<b>213</b>	<b>299</b>	<b>652</b>

The strategy guides the way a firm performs individual activities and organizes its whole value chain (Porter 1980). There are two central concerns that underlie the choice of competitive strategy: the industry structure (five competitive forces mentioned above) in which the firm competes, and the positioning within the industry. The two generic strategies are the lower cost and the differentiation. Gaining cost advantage requires

optimizing the linkages among the activities as well as the close coordination with suppliers and channels. The differentiation results form the way a firm’s product and associated services affect its buyer activities. In addition, the role of the competitive scope is important since it shapes the nature of a firm’s activities, the way they are performed and how the value chain is configured.

Table (5.10) summarizes the generic strategies that are implemented by the SMEs working in the natural stone in Jordan, Turkey and Italy. In Jordan, almost (10%) of the SMEs, working in the natural stone sector applies high differentiation and high cost strategy, and the same percentage applies high differentiation with low cost strategy. Almost (40%) of them applies high cost and low differentiation strategy and almost the same percentage applies low cost alongside with low differentiation strategy.

In Turkey (47.4%) of the SMEs applies low cost and low differentiation strategy while the SMEs that implement high differentiation and low cost strategy represent (23.9%) of the respondents. The percentage of the SMEs that is following the high cost with low differentiation strategy is (16.4%) and (12.2%) applies high cost along with high differentiation strategy. In Italy, (46.5%) of the SMEs applies high differentiation and high cost strategy while (15.7%) of the SMEs applies high differentiation with low cost strategy. The percentage of the SMEs that implements high cost along with low differentiation strategy is (22.4%) and (15.4%) applies low differentiation along with low cost strategy.

**Table 5.10. Generic Strategies – Summary**

Generic Strategies		Cost Leadership Strategy	
		Low	High
<b>Differentiation Strategy</b>	<b>Low</b>	Jordan (37.8%)	Jordan (43.6%)
		Turkey (47.4%)	Turkey (16.4%)
		Italy (15.4%)	Italy (22.4%)
	<b>High</b>	Jordan (9.3%)	Jordan (9.3%)
		Turkey (23.9%)	Turkey (12.2%)
		Italy (15.7%)	Italy (46.5%)

Table (5.11) presents percentages of the three generic strategies (cost leadership, differentiation, and focus) in the three countries. It is noticed that (71.3%) of the Turkish SMEs implement low cost strategy, while (62.2%) of the Italian SMEs implement differentiation strategy, and (57.2%) of the Italian SMEs implements the focus strategy.

**Table 5.11. Generic Strategies versus Countries**

Country	Generic Strategy		
	Cost (%)	Differentiation (%)	Focus (%)
Jordan	47.1	18.6	43.6
Turkey	71.3	36.1	50.2
Italy	31.1	62.2	57.2

In Jordan, there are two groups of the SMEs. The first group invests heavily in technology to improve productivity and assure quality. These firms generally have strong relations with equipment producers and attempt to compete on image and design. These firms are export oriented than average, advertise heavily and invest substantial amounts in showroom expositions. The second group included a larger number of the SMEs in Jordan competes on price. A reason for not competing with a high value added product could be the management of these SMEs. The Jordanian SMEs' managers might either fail to understand the opportunities of competing in premium segments, or might indeed be better at low cost processes, products, and services. Other reasons are the business environment, the weaknesses in the infrastructure, science and technology system, and labor force skills.

Table (5.12) shows the significant differences in the impact of the different scenarios on the innovation, customer satisfaction, internal business, and financial performance of the SMEs working in processing the natural stone in Jordan, Turkey and Italy. However, there is no one type of global strategy, but numerous ways of competing globally involving choices about where to locate and how to coordinate activities.

**Table 5.12. Kruskal-Wallis Test – Generic Strategies and Competitive Advantage**

No	Variable	Chi-Square	Sig.
1.	Percentage of new products of total turnover	339.29	0.00*
2.	Time necessary to develop new generation of products	304.59	0.00*
3.	Customer satisfaction	225.86	0.00*
4.	Market share	232.31	0.00*
5.	Customer loyalty	229.07	0.00*
6.	Employees satisfaction	164.54	0.00*
7.	Employees loyalty	206.06	0.00*
8.	Productivity of your employees	228.42	0.00*
9.	Return on Investment	259.51	0.00*
10.	Profitability	250.73	0.00*
11.	Revenue growth	174.64	0.00*
12.	Cost reduction	228.35	0.00*
13.	Exportation	356.29	0.00*

\* Significant (values are less than or equal 0.05) with DF = 7

The aforementioned analysis shows that there are significant differences in the influence of the different scenarios on the generic strategies of the SMEs working in processing the natural stone in the three countries.

***The Analysis of data rejected the third hypothesis. There are significant differences in the influence of the generic strategies on the competitive advantage of the SMEs working in processing the natural stone sector in Jordan, Turkey and Italy.***

Table (5.13) shows that the strategy of "low cost with high differentiation in the broad market" leads to achieve the highest rank in innovation, customer satisfaction and financial performance. While the strategy of "low cost with high differentiation in niche market" leads to achieve the second rank in innovation, customer satisfaction and financial performance (see Appendix E for Tukey test).

**Table 5.13. Generic Strategies and Competitive Advantage- Mean**

<b>Strategy*</b>	<b>Innovation Mean (rank)</b>	<b>Customer Mean (rank)</b>	<b>Employee Mean (rank)</b>	<b>Finance Mean (rank)</b>
<b>1</b>	2.38 (6)	3.52 (6)	3.62 (5)	3.07 (6)
<b>2</b>	3.96 (1)	4.16 (1)	4.09 (2)	3.85 (1)
<b>3</b>	2.50 (5)	3.60 (4)	3.39 (6)	3.25 (4)
<b>4</b>	3.89 (2)	4.06 (2)	4.16 (1)	3.79 (2)
<b>5</b>	2.24 (7)	2.79 (7)	3.04 (7)	2.30 (7)
<b>6</b>	3.85 (3)	3.90 (3)	3.94 (3)	3.39 (3)
<b>7</b>	2.06 (8)	2.68 (8)	2.89 (8)	2.05 (8)
<b>8</b>	3.03 (4)	3.58 (5)	3.63 (4)	3.13 (5)

\* Please see table 5.9 for the eight generic scenarios

In addition to responding to and influencing industry structure, the Jordanian SMEs must choose a position within the industry. In order to implement the low cost strategy, these SMEs have to design, produce, and market a comparable product more efficiently than its competitors. In this case, there will be a high competition with many international competitors from Turkey, Egypt and China, and many others. As an example, the labor and transportation costs in Egypt are lower than Jordan. Thus, the Egyptian can benefit from the concept of the economies of scale due the huge quantities of raw material they have.

The Jordanian SMEs should focus on offering high value-added products rather than focusing on delivering products in low prices. In order to provide differentiated products, the Jordanian SMEs need to focus on unique and superior value to the buyer in terms of product quality, special features, and after-sales service. As well, the Jordanian SMEs, due to the limited quantities and inconsistency in quality, should focus on the markets such as Saudi Arabia and the USA where they can sell high value-added products, and they should focus on niche segments such as floor tiles and inner wall covering where they can specialize in these production lines.

#### **5.4. The ICT and the Natural Stone Sector (Jordan, Turkey and Italy)**

This section discusses the usage of the computer and the Internet, and the impact of the ICT on the competitive elements of the SMEs working in the natural stone sector. The data shows that the percentage of the SMEs using the computer in Jordan is (80.7%), in Italy (95.7%), and in Turkey (89.2%). This percentage for using the computer in the natural stone sector in Jordan is relatively higher than other sectors in the country. The average percentage of using the computer in the manufacturing industries in Jordan is almost (60%) (DOS 2005). The Jordanian SMEs have the lowest rank in using the computer for printing, accounting, inventory control, payroll and production. As well, the data shows that (74.2%) of the respondents using the Internet in the three countries (60.7% in Jordan, 82.9% in Italy, and 70.9% in Turkey). The percentage of using the Internet by the SMEs working in the natural stone sector in Jordan is relatively higher than other sectors in the country. The average percentage of using the Internet in the manufacturing industries in Jordan is almost (40%) (DOS 2005).

In order to assess the impact of the ICT on the competitive elements of the SMEs working in processing the natural stone sector, each respondent using the Internet in the three countries has been asked about the impact of the ICT on the competitive elements. Table (5.14) shows the significant differences in all of the elements between the three countries. It is noticed that Jordan is behind Turkey and Italy in the impact of the ICT on the competitive elements for different reasons. Some of these reasons are:

- ✓ *Business environment.* Still there is a need to simplify corporate regulations and simplify dissolution of businesses.
- ✓ *Infrastructure.* The Internet connection needs to be faster since the availability of broadband connections may affect the SMEs' decisions to adopt e-business.
- ✓ *ICT Skills.* Most of the small firms are hiring people interested in technology and not ICT professionals.
- ✓ *Information.* Small firms lack information regarding the benefits and costs of adoption of the ICT. On-line provision of government information and services can increase the efficiency and coverage of public service delivery to small firms.

**Table 5.14. Kruskal-Wallis Test – Impact of the ICT**

No	Variable	Chi-Square	Sig.
1	Reduce transaction costs	87.26	.00*
2	Improve quality of product/service	94.08	.00*
3	Defend your self against competitors engaging in e-commerce	111.66	.00*
4	Increase the flexibility of your firm	131.77	.00*
5	Increase your ability to innovate	26.58	.00*
6	Increase job creation in your firm	21.54	.00*
7	Improve the image of your firm	64.06	.00*
8	Contribute to solving your problem of lack resources and access to technology	76.9	.00*
9	Increase market share	20.65	.00*
10	Enter new markets	43.98	.00*
11	Reach new suppliers	16.61	.01*
12	Reach new customers	19.47	.00*
13	Work with large firms (local and international)	71.95	.00*
14	Improve control of your business process organization	18.94	.00*

\* Significant (values are less than or equal 0.05) with DF = 2

The aforementioned analysis shows that there are significant differences in the impact of the ICT on the competitive elements of the SMEs working in the natural stone industry between the three countries.

***The Analysis of data rejected the fourth hypothesis. There are significant differences in the impact of the ICT on the competitive elements of the SMEs working in processing the natural stone sector between Jordan, Turkey and Italy.***

Very few initiatives in the area of the e-commerce have been developed in Jordan. Tejari<sup>29</sup>, is one of these initiatives designed and developed in the United Arab Emirates and expanded in Jordan as a business-to-business (B2B) e-Marketplace where member companies and organizations can buy and sell goods and services online in real time.

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<sup>29</sup> [www.Tejari.com](http://www.Tejari.com)

Through Tejjari, buyers can find, compare, and procure products and services. Buyers can conduct reverse auctions in which sellers bid to supply products and services at the most competitive prices. On the other hand, suppliers can list their products and services, to sell them through online catalogs or auctions.

E-commerce applications are expected to grow given the high amount of use of Visa and other credit cards in the country. Jordan Telecom, through its subsidiary e-dimension and the Jordanian banks launched the e-payment gateway in 2003, which was intended for telecommunications billing but should be extended to utilities and commercial purposes. E- Banking has been provided for the last several years by the main commercial banks in Jordan. The e-services include: internet banking, shopping, transfers, e-cards, ATM, e-transactions, bank to bank transfers. Recently, Visa Jordan is issuing the Smart Card and e-service commercial portal for commercial transaction, which will make Jordan among the leading countries in the region.

The Jordanian SMEs need to understand that the technological change is one of the principal drivers of competition. Technological change is not important for its own sake, but is important if it affects the competitive advantage and the industry structure. It plays a major role in the industry structural change, as well as in creating new industries. Therefore, the impact of the new ICT, especially the Internet, on the five competitive forces, value chain, industry foundries, and sources of competitive advantage should be analyzed by the Jordanian SMEs in order to benefit fully from this new technology. It is also important to forecast the path of technological evolution to allow a firm to anticipate technological changes and thereby improve its position. With some insight into the likely pattern of technological evolution, a firm may be able to anticipate changes and move early to reap competitive advantage. However, there will always be uncertainty whenever technology is involved.

The Jordanian government should foster appropriate business environment for the e-business and the ICT uptake and target programs to overcome market failures. Policies that affect the adoption and use of the ICT include those designed to expand and improve the quality of network infrastructure and legal and regulatory environment, foster

technological diffusion and create a favorable business environment. In addition to the ICT awareness programs, business consultation and training services are reinforced to enhance the ICT and managerial skills. However, there is no one-size fits all approach and policies depend on national circumstances. Moreover, the e-government in Jordan can increase the efficiency and coverage of public service delivery to small firms, and to act as a model user and standard setter for the ICT adoption by small firms.

As mentioned earlier, the natural stone industry in Jordan is located in the factor-driven stage. This industry draws its advantage almost from the basic factors of production. This source of competitive advantage limits sharply the range of industry segments in which the Jordanian firms can successfully compete in international terms. The Jordanian firms compete solely on the basis of price; technology is sourced largely from Italy; Turkey and Germany and very few Jordanian's firms have direct access to foreign markets.

Each nation goes through its unique process of development (Porter 1998). Some of the most telling conditions necessary for the Jordanian natural stone industry to progress to more advances stages are the following:

- √ The Jordanians need to focus on more advanced and more specialized factors such as new ways of production and new technologies. This could be achieved by providing the owners/ managers of the firms with the necessary training, information and capital.
- √ Shifting the rule of rivalry from price-based to innovation-based competition. This could be achieved by upgrading the quality of demand that creates the potential for success in more sophisticated segments. Upgrading the quality of demand achieved by rising the level of income and education of the citizens.
- √ The Jordanian government plays a role through its policy choices. The government has already signed many trade agreements with the USA and Europe and the WTO. Still, the government needs to revise the existing rules and regulations.
- √ As well, the Jordan SMEs play a role by implementing the suitable strategies. It could be infeasible for the Jordanian firms to heavily invest in enlarging

their production scale in Jordan or to invest abroad for two reasons: Jordan does not have a large raw-material quantities and that needs a huge capital. Instead, these firms might establish contact points in different countries such as the US, Europe and Saudi Arabia (potential countries where these firms can sell value-added products).

- √ The proposed clusters can help the Jordanian SMEs to export their products to the international markets. Competitive success in the business services is a sign of achieving innovation-driven competitive advantage. However, achieving competitive advantage in the natural stone industry and its related and supporting industries requires a pre-existing base of strong firms and higher levels of technological capabilities.
- √ The ICT might assist in creating more specialized factors, delivering specialized training to the owners/ managers of the SMEs, building the natural stone cluster, and facilitating the role of the government. As well, the ICT might assist in connecting the international contact points with the local SMEs. The ICT provides an e-trading platform to the utilities companies in Jordan, and helps both sellers and buyers simplify their procurement processes and reduce costs. As well, the SMEs can use the Global Technology Network, provided by the US Agency for International Development (USAID), to find comparable small and medium-sized US companies to share business solutions that satisfy their existing technological needs. It is worth mentioning that the Jordanians may have a better opportunity, than Turkey and Italy, in benefiting from the ICT in international trade for two reasons: Turkey and Italy are located in the low and middle ICT intensity groups respectively, thus Jordan can follow and edge the two countries in the ICT intensity. The second reason is that the Jordanian natural firms did not have their own existing system in exporting their products, so they can build a new and flexible one with the assistance of the ICT.

### **5.5. The SWOT Analysis of the Jordanian SMEs**

It has been a long struggle, but Jordan's economy seems to be turning a corner. The GDP growth rate is accelerating, exports are rising, and reserves are at record levels. However, Jordan still faces formidable challenges in the area of foreign debt, the budget deficit, poverty and unemployment (Oxford Business Group 2003).

In the banking and finance sector, the challenge of international accountability is a major issue for Jordanian financial institutions as they are trying to integrate into the global economy. With regard to loan facilitation, access to local equity and bond market, Jordan positioning itself nears the lower middle of the international list (WEF 2005). Nonetheless, lending remains predominantly short-term and trade related; very little lending is directed at long-term productive investments. As well, the stock market is considered underdeveloped in Jordan (Oxford Business Group 2003).

One of the major challenges in Jordan is the discrepancy between educational curricula and the actual needs of the labor markets, which furthers the dilemma of high unemployment rates and declining real wages. As well, availability of scientists and engineers, spending on R&D, and the government's priority of ICT are all crucial issues to technological innovation. Thus, it will be difficult to develop the scientific talents needed to prosper in a knowledge-based economy.

In terms of openness, the Jordanian economy remains low. This is mainly due to cost of importing foreign equipment, hidden import barriers, and exchange rates and exports. When a firm needs to import foreign equipment, the combined effects of import tariffs, license fees, bank fees, and the time required for administration raises the cost by 11-20% (JMOP 2003). As for the exchange rate, the Jordanian Dinar has been pegged to the US Dollar since late 1995. Nevertheless, by examining the evolution of the effective exchange rate in Jordan since 1995, it becomes evident that there is a general upward trend illustrating the depreciation of the Jordanian Dinar. This depreciation may adversely affect Jordanian exports, as their competitiveness in the world market would diminish considerably.

### **5.5.1. Opportunities**

Although Jordan is a small country with a limited income per capita (CIA 2002), it is a country with a rapidly increasing population. This makes investments, especially in the infrastructure and housing, essential. That leads to increase the demand on the local and international natural stone. Besides, the geographical position Jordan occupies in the heart of the Middle East makes it relatively inexpensive to export natural stone and other commodities to Asia and to the Gulf due to the low transportation cost. In addition, Aqaba Port and Queen Alia International Airport enable easy access to Europe and United States.

The Jordanian government is doing all its best to provide a fertile environment in order to support firms that are working in the natural stone sector. Therefore, it signed a favorite agreement with the EU, Israel, and Free Trade Agreement with the United States, "Jordan-United States Business Partnership's (JUSBP). Its objectives are to develop the Jordanian dimension stone sector by coordinating and organizing the efforts of all the Jordanian natural stone manufacturers via the Jordan Stone and Tile Exporters Association (JOSTONE). Furthermore, the government has established many industrial zones and becomes a member in the World Trade Organization (WTO). In addition, Jordan has established Qualifying Industrial Zones (QIZ), so the foreign investments are expected to increase in different industries.

In order to study the impact of the international agreements of the natural stone sector in Jordan, the following tables present the impact of these agreements on the customs tariff and thus on the competitiveness of the sector. Most imports into Jordan are subject to tariffs and import taxes. Industrial raw materials and capital equipment imported by licensed industrial projects are exempt. Import tariffs range between 0-45 percent on most commodities. Tariffs on luxury items are higher, ranging between 60-120 percent. The Jordanian Standards and Measures Department is responsible for all issues related to standards, measures, technical specifications and International Standards Organization (ISO) certification and qualification, except for the pharmaceuticals, which are handled by the Ministry

Table (5.15) presents the customs tariff on exporting stone and marble products to the US from different countries.

**Table 5.15. Customs Tariff to US and to EU**

	<b>Jordan</b>	<b>Turkey</b>	<b>Israel</b>
Raw Material	0	0	0
Processed	0	0	0

*Source:* JMOP 2003

It is shown that the Jordanian firms can export raw and processed natural stone to the US market without any customs tariff. At the same time, Turkey and Israel have the same special treatment. Table (5.16) presents the customs tariff on importing the US products to Jordan till 2010

**Table 5.16. Customs Tariff on US Products**

	2003	2005	2010
Raw Material	4%	0	0
Processed	21%	15%	0

*Source:* JMOP 2003

By the time, the customs tariff on the US products has decreased and by the year 2010, the customs tariff will be zero. By that time, the intra-trade between Jordan and the US will increase. The Jordanian firms will have the capability and experience to export to the US market and at the same time, the Jordanian buyers will benefit from the advantage of buying the US products with zero customs tariff.

Table (5.17) presents the customs tariff on exporting the EU products to Jordan till 2014. It is expected that the customs tariff on the EU raw material and processed products will be declined. By the year 2014, the customs tariff on the EU products will be zero. In this case, the demand on the European products will be much higher and that may affect the market share of the local products.

**Table 5.17. Customs Tariff on EU Products**

	2006	2009	2014
Raw Material	9%	6%	0
Processed	21%-27%	18%	0

*Source:* JMOP 2003

In order to liberate the national economy and increase the flow of foreign capital, the government of Jordan has initiated a privatization program designed to activate the role and efficiency of private investors in the long-term development plans of the Kingdom. As an example, the Telecommunication Corporation and the Jordanian Electricity Authority were both transformed in 1996 into public shareholding companies as a first step towards full privatization (CIA 2005). This program will increase the efficiency and productivity of the related and supporting industries for the natural stone sector.

When Jordan and Israel signed the peace treaty in 1994, it did not only mark an end to a state of war but it also set in motion the formation of links of economic cooperation and interdependence. One day, borders would no longer be militarized frontiers. Instead, there will be highways transporting people and goods to new markets and destinations. Proponents of this so-called "New Middle East" vision argued that such a model would help promote Arab-Israeli peace by demonstrating that it could generate mutual economic benefits and would then solidify closer relations by sharing material and strategic interests between the regional governments and their respective private sectors (JMOP 2003).

The existing legal system provides a basis for the necessary commercial and investment functions (CIA 2002). It defines property rights, the exchange of property rights, rules for business entry and exit and rules for market operation. Under the Copyright Law all works must be registered at the Department of National Libraries that belongs to the Ministry of Culture. Trademarks must be registered at the Ministry of Industry and Trade. Patents must be registered with the Registrar of Patents and Trademarks at the Ministry of Industry and Trade. Protection is granted for seven years and is renewable for an additional seven (JMOIT 2003). The explorations of licensing and mining rights are

governed by special rules issued by the Natural Resources Authority (NRA) based on the Regulatory Law of Natural Resources for the year 1968. For exports and imports purposes, an approval from both the Ministry of Industry and Trade and NRA is required (NRA 2003). We notice that the existing legal system covers all of the necessary transactions but still needs both simplifications and updating.

The development of Jordan's educational system can only be described as dramatic. Starting from almost nothing in the early 1920s, Jordan has forged a comprehensive, high-quality system to develop the human capital of its citizens. The rapid spread of facilities enabled citizens in poor and remote areas to gain access to education. In comparison to other countries in the region, Jordan has the highest rate of colleges and university graduates. There are several universities in Jordan whose civil engineering and architecture faculties are of first-rate in the Middle East. However, practical orientation remains weak and there is a need for vocational schools that would teach how to cope with new technological developments that affect the industry (JMOP 2003). We notice that there are many universities that offer academic programs in Jordan that are necessary for the competitiveness of the firms working in the natural stone sector, such as engineering, but what really not there is the vocational schools that offer practical diplomas such as stone quarrying, stone cutting,....

The Jordanian firms had faced some unfavorable out of control events. The Iran-Iraq War created serious problems in what used to be a good market for these firms. Similarly, the Iraqi's invasion of Kuwait in 1990 and the Gulf War in 2003 created considerable troubles for the Jordanian firms. At the same time there is an opportunity for the Jordanian firms to participate in rebuilding Iraq. As well, the Israeli restrictions on the Palestinian Territories and the limitations on the Palestinian exports assist in increasing the demand on the Jordanian natural stone as a substitute to the Palestinian ones.

### **5.5.2. Strengths**

As mentioned earlier, most of the SMEs in Jordan are family-owned businesses. The family businesses have unique working environment that fosters family-oriented workplace and inspire greater employee care and loyalty. In addition, they have more flexible work practices for their employees, and have lower recruitment costs. The family members have a family language that allows them to communicate more efficiently and exchange more information with greater privacy. Thus, family relationships generate unusual motivation, loyalties and trust. Family firms have less organizational structure and lower monitoring and control costs. Decision making tends to be centralized among top family members, which decreases costs and increasing flexibility of the firm. Moreover, the family's reputation can play a major role in the success of the firm. Many natural stone companies were certified for (Quality Management Systems ISO 9000) and (Environment Management Systems ISO 14000).

A variety of different stone formations can be found in Jordan that includes types such as limestone, granite, sandstone and basalt. Limestone is the most quarried and used type of stone in Jordan. It is found in different parts of the country in a variety of color ranges: white, yellow, gray, brown and red. It is also exported to other countries in the region, either as a raw material or as a finished, cut and dressed product. Some buildings in Jordan have employed stone brought from Palestine, which includes some of the best known quarries in the region. In Jordan, stone is quarried locally, as the cement is produced locally and steel reinforcement bars are available locally, as well. Jordan also produces its own ceramic tiles, kitchen cabinets, timber joinery, air conditioning and heating equipment, electrical items, elevators, pipes and wires. These are all available at competitive prices, providing savings in customs duties and overseas transportation.

### **5.5.3. Threats**

According to the Jordanian Ministry of Planning (2003) study, several factors show that Jordan's research and development (R&D) effort suffers from a weak participation by the private sector. While the university-based intellectual potential is high, the university-industry interactions are weak because there is an inadequate funding for cooperative projects at the universities and research laboratories. Besides, the Jordanian SMEs find difficulties in obtaining finance. Studies show that no more than (5%) of the available bank credit is provided to the industrial SMEs (EJADA 2002). Many banks prefer to work with large companies and banks that might make loans for small companies actually lack the knowledge of how to make small loans (Oxford Business Group 2003; JMOP 2003). The high interest rates and prerequisites of these institutions are considered obstacles to the SMEs to receive loans and other difficulties in raising capital in Jordan are due to the owners' unwillingness to share partners outside the family.

Even though, Jordan's active banking and finance sector has been liberalized and grown rapidly in the recent years, it still needs some reforming especially in the case of the relationship with small firms. Since 1989 the Central Bank of Jordan (CBJ) has initiated a number of reforms designed to make the banking sector more secure and competitive. In 2003, there were twenty-four commercial banks and financial institutions operating in Jordan (CBJ 2003), of which nineteen are domestic and five are foreign. There are five private investment banks and one Industrial Development Bank (IDB).

In Jordan, the basic items of infrastructure (water, electricity, transportation, telecommunications and water recycling) are available. However, the existing of an industrial infrastructure such as standard and quality control institution, industrial zones and parks, an export marketing institution, and consulting and training services are not very active (Oxford Business Group 2003). Also, there is an unclear picture of the nature of foreign markets to the businessmen in Jordan. This is due to the shortage of feasibility studies and knowledge of the regulations and standards in other markets. The Jordanian customer's awareness is relatively weak with regard to product quality standards. The opportunity to develop demand conditions under the current situation is rather limited.

There are many areas in Jordan, especially the poor ones, still do not use the natural stone in their buildings due to the high prices of the natural stone when compared to other substitutes such as cement or bricks (JMOP 2003).

The threat of rivals in Jordan ranges from moderate to high. The reasons behind that are due to the high numbers of competing firms in the small country. The bargaining power in Jordan is relatively high since the buyers have full information about the prices and specifications and most of the Jordanian firms produce standard products. Thus, the buyer can easily switch to another competitor. The threats of suppliers are almost high. This is due to the limited number of quarries, credible forward integration threat by suppliers, and significant cost to switch between suppliers. Furthermore, the tight regulations in obtaining the necessary licenses for extracting the raw materials play a role in limiting the number of quarries. The threat of substitutes is moderate since it is not easy for buyers to switch to substitutes such as the industrialized stone or cement bricks for building their own houses. The threat of new entrants is moderate since there are no government's barriers to enter the industry and the distribution channels are not restricted. Besides, the required assets, technical qualifications and organizational economies of scale, are not difficult to be reached.

#### **5.5.4. Weaknesses**

The fundamental weaknesses of the natural stone sector in Jordan are the insufficient know-how, and traditional and outdated technology (JMOP 2003). The design of the SMEs' products is traditional and is produced using inefficient methods and outdated tools. Furthermore, the investment in information and communications technologies (ICT) remains low in Jordan, and the support policies that would have been necessary for their technological development were not available. The low level of technology is linked to the weakness in innovation. The lack of technical skills keeps the SMEs working in the natural stone sector from deriving the full benefit of any cost advantages to be used domestically or for export. While the SMEs dominate the natural stone sector in terms of

employment, they evidently operate with a comparatively little capital equipment, and generate relatively low levels of value added (JMOP 2003). Furthermore, these firms receive only a minor share of the funds mobilized by the banking sector.

Supplier-buyer relationships depend on the family and personal ties. These relations lack any significant horizontal or vertical linkages (JMOIT 2003) and most of the SMEs have no clear distribution channels in the local and international markets. That leads to lack the coordination between firms and force these firms to negotiate small orders focusing on price rather than quality, which in turn weakens their bargaining power. Owners-managers are usually professional themselves, and they participate in practical work. The Jordanian natural stone firms are usually not that formal and they use the subcontracting in the natural stone industry which contributed to the lack of attention to formalization since it gives a firm a capacity to undertake work beyond its scope in terms of size and specialization. In the absence of regulations governing the hiring process, the Jordanians rely on the security of family relations. The most single criterion for hiring is referrals. The Jordanian family owners rely on their family members or friends to fill vacant positions.

Technology and spare parts are mainly imported from Italy, Turkey and Germany. Some of the hand tools used in the trimming and polishing are locally manufactured. There is a lack of information dissemination about the new technologies used in the industries (JMOP 2003). The Jordanian firms lack insurance, which protects them in case of any risk of devaluation or political changes (Oxford Business Group 2003).

Table (5.18) presents the matrix of the SWOT analysis.

**Table 5.18. Matrix of the SWOT**

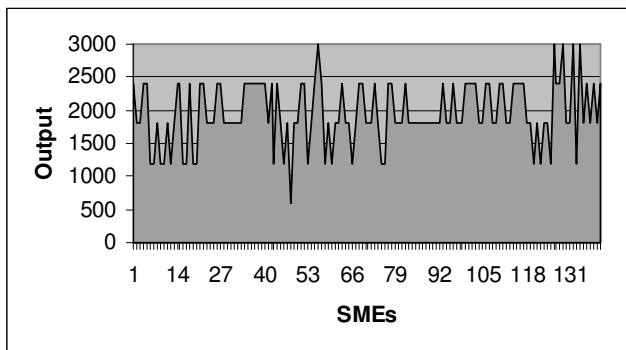
<p style="text-align: center;"><b><u>Opportunities</u></b></p> <p>Liberal trade and foreign investment policy (open economy)          High speed of construction industry development          Regional peace process          Geographic location of Jordan          Rebuilding Iraq          Low labor cost          Remarkable growth in services sector          Low transportation costs          International donations          Unique colors of stones and construction materials reserves          Enhancement of the variety and quality of construction materials</p>	<p style="text-align: center;"><b><u>Threats</u></b></p> <p>Small, limited local market          Small range of products that comply with international standards          Old reserves damages by explosions          Antiquated laws and regulations          Cross-border trade restrictions with neighboring countries          Environmental issues          Low variety of stones reserves          Credit terms and conditions of commercial banks discourage investments in SMEs          Existence of several small stone reserves in one mine area          Obstacles in the SME registration procedures</p>
<p style="text-align: center;"><b><u>Strengths</u></b></p> <p>Personnel              √ Employee turnover              √ Experience              √ Labor relations          Quality Management              √ Internal practices to enhance quality of products and services              √ Acquiring ISO certificates          Organization              √ Flexibility              √ Communication          Production and Operations              √ Flexibility          Unique Colors</p>	<p style="text-align: center;"><b><u>Weaknesses</u></b></p> <p>Personnel              √ Management, employees' skill          Quality Management              √ Lack coordination and networking among SMEs and related industries              √ Procedures for monitoring quality          Information Systems              √ Accuracy of information              √ Ability of people to use information          Organization              √ Strategic planning, control system          Marketing              √ Product image, and promotion              √ Market share          Financial and Accounting              √ Capital equipment, and cost control          Production              √ Know-how, R&amp;D - innovation              √ Level of value added              √ Economies of scale              √ Raw material availability</p>

## **5.6. Labor Productivity**

This section compares the productivity of each firm within and between the three countries in terms of labor. In order to calculate the output of each firm in the three countries, labor productivity of each firm has been multiplied by the number of labors in that firm (i.e.  $\text{Output} = \text{Labor Productivity} * \text{Number of Labors}$ ).

The labor productivity of each firm was measured by the five-point likert scale, and to make the comparison easier and more meaningful, each scale was multiplied by 20 (1 was converted to 20, 2 to 40 as so forth). As an example, the labor productivity in the firm number one in Jordan is measured by number 4 in the five-point likert scale (this figure was multiplied by 20 and became 80) and the number of employees of this firm is 7, thus the output is calculated by multiplying  $80 * 7 = 560$  units. After repeating this process for all of the firms in Jordan, it was noticed that the firm highest output is 3000 units (30 labors multiplied by 100 units per labor). The figure below (5.3) shows the outputs of the all of the respondents in Jordan.

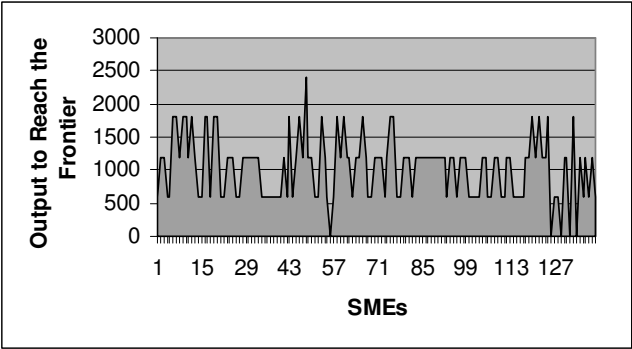
**Figure 5.3. The SMEs' Output - Jordan**



In order to calculate how much could each firm expand its output to reach the frontier of the best (3000 units in the Jordanian case), the productivity of each firm was multiplied

by the number of labors of the best performer (30 labors in the Jordanian case) in order to keep the labor constant. Then, the output of each firm was deducted from the best performer's output as shown figure (5.4).

**Figure 5.4. The SMEs' Output Gap - Jordan**



The same procedure was followed in the Turkish and Italian cases. In the Turkish case, the output of the best performer was 7200 units (72 labors \* 100 units per labor) as shown in figure (5.5).

**Figure 5.5. The SMEs' Output - Turkey**

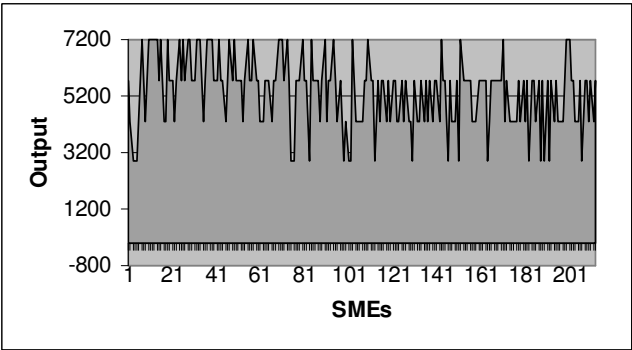
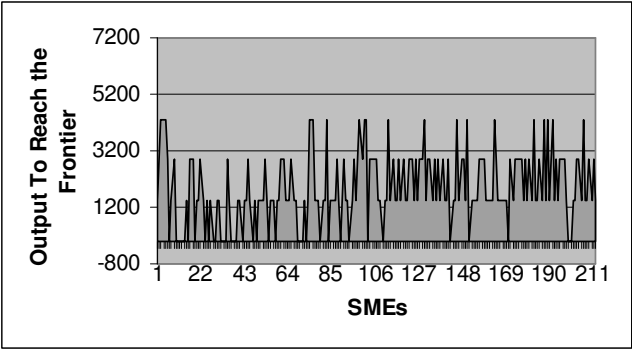


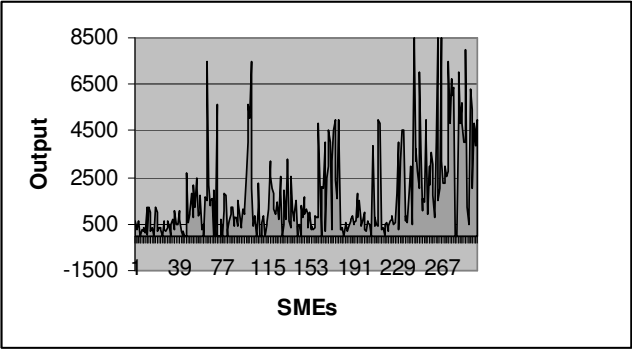
Figure (5.6) shows the amount that each firm could expand its output in order to reach the frontier of the best performer.

**Figure 5.6. The SMES' Output Gap - Turkey**



In Italy, the output of the best performer was 8500 units. Figure (5.7) shows the output of the SMEs in the sample.

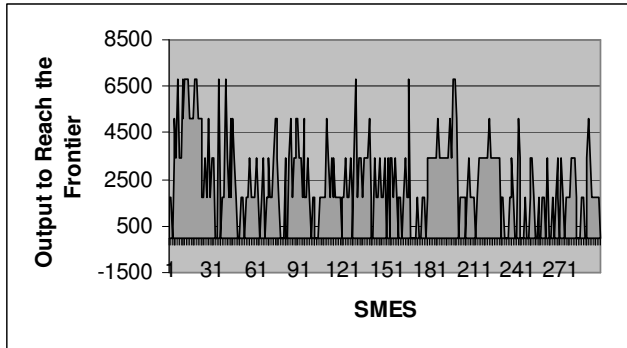
**Figure 5.7. The SMEs' Output - Italy**



In order to calculate how much could each firm expand its output to reach the frontier of the best performer is 8500 units ( $85 \text{ labors} \times 100 \text{ units per labor}$ ), the productivity of

each firm was multiplied by the 85 (the number of labor of the best performer to keep the number of labors constant). Figure (5.8) shows the result.

**Figure 5.8. The SMEs' Output Gap - Italy**



In order to compare the labor productivity across the three countries, the regression equation of the labor productivity in each country was found. Regression analysis tells how one variable is related to another by providing an equation that allows using the known value of one or more variables to estimate the unknown value of the remaining variable (kindly see appendix H). The SPSS was used to find the regression coefficient for each country as follows:

## ***Jordan***

Table (5.19) presents the regression coefficient and figure (5.9) shows regression line in Jordan. Therefore, the output is:

$$Y = - 225.65 + 89.67 X$$

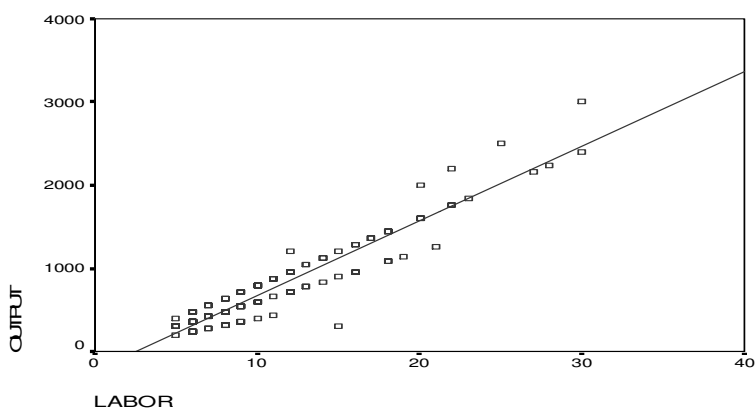
Where Y = Firm Output

X = Number of Workers

**Table 5.19. Regression Coefficient - Jordan**

Un-standardized Coefficients		Standardized Coefficients	t	Sig.
B	Std. Error	Beta		
-225.652	32.096	0.947	-7.030	.00
89.670	2.608		34.377	.00

**Figure 5.9. Regression Line - Jordan**



Turkey

As shown in table (5.20) and figure (5.10), the output in Turkey is equal to:

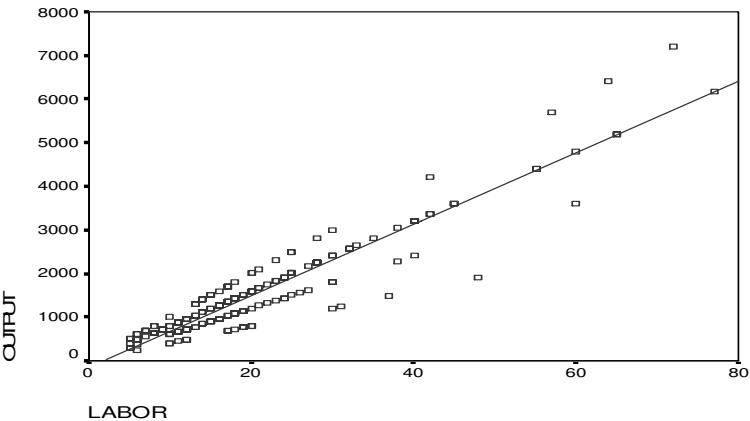
$$Y = -129.41 + 81.58 X$$

Where Y = Firm Output  
X = Number of Workers

Table 5.20. Regression Coefficient - Turkey

Un-standardized Coefficients		Standardized Coefficients	t	Sig.
B	Std. Error	Beta		
-129.413	48.443	.943	-2.671	.00
81.587	1.993		40.944	.00

Figure 5.10. Regression Line - Turkey



## Italy

Table (5.21) and figure (11) shows that the output in Italy is equal to:

$$Y = -204.10 + 85.89 X$$

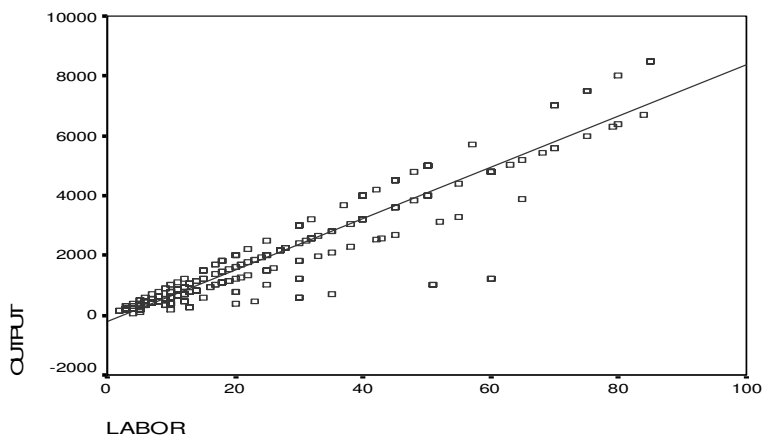
Where Y = Firm Output

X = Number of Workers

**Table 5.21. Regression Coefficient - Italy**

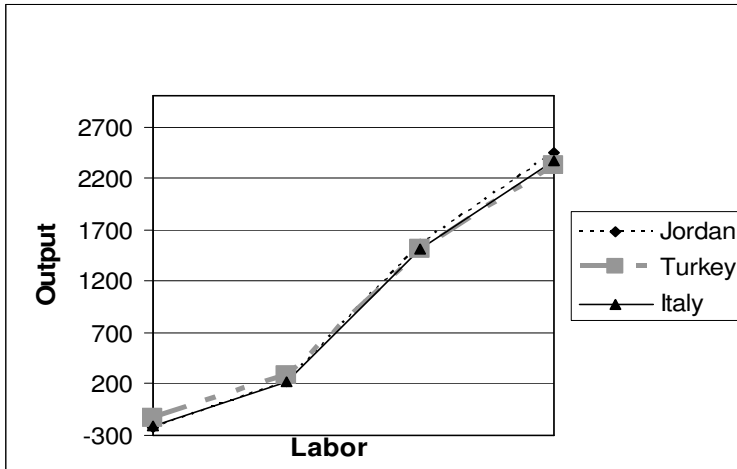
Un-standardized Coefficients		Standardized Coefficients	t	Sig.
B	Std. Error	Beta		
-204.101	62.605	.937	-3.260	.00
85.894	1.968		43.644	.00

**Figure 5.11. Regression Line - Italy**



An interesting result was reached. The Turkish firms have a higher output in comparison with Jordan and Italy while the number of labors is less than 15. The Jordanian firms have a higher output than Italian and Turkish firms while the number of labors is more than 15. Figure (5.12) shows the output equations for the three countries.

**Figure 5.12. Regression Lines – Jordan, Turkey and Italy**



The aforementioned result could be explained by different reasons:

- √ The Italians emphasize more on quality, time, and technological and process development.
- √ Most of the firms in Jordan use labor-intensive operations. Thus, by increasing the number of workers, their output will increase. On the contrary, most of the Turkish firms use capital-intensive operations, thus increasing the number of workers might lead to diminishing returns to labor, which means that the increase in output resulting from the employment of one more unit of labor declines as the amount of labor used increases. Diminishing returns are explained by the fact that as employment increases and other inputs remain constant, each labor on the job has fewer machines with which to work.

### **5.7. Incomparability of Measurement**

Bias can result in systematic errors and thus distort results and interpretations. There is a chance that differences between countries regarding some of their performance could be due to a different way of responding on a likert scale basis (King et al. 2004). The researcher took into account the impact of inter-personal variation between the three countries in response patterns. This inter-personal may have an impact on the findings. There are two possible explanations for this unexpected finding. The first explanation is that even if the respondents from different cultures perceive performance in similar ways, they may report it differently on survey questionnaires, guided by culturally-supported values and norms about how a respondent should respond on a survey. It seems that some cultures are more openly forthright and honest, and yet others are more diffident and harmonious in their responses.

The second explanation is that respondents evaluate performance against their local reference-frame, which includes attributes of the local economic situation, such as comparative business opportunities and expectations for their fair profitability and investment growth. For example, Jordanians might perceive greater relative productivity gains, profits and reputational benefits from the training programs and technology transfer opportunities than an equivalent Italians from a more-developed country.

The literature on this problem has focused on developing ways of writing more concrete, objective, and standardized survey questions and developing methods to reduce incomparability. The most widely used modern terminology for interpersonal incomparability is differential item functioning (DIF)<sup>30</sup>. The DIF centers on the identification of common anchors that can be used to attach the answers of different individuals to the same standard scale. This helps, but is often insufficient (King et al. 2004). Researchers sometimes compare a survey response at issue to designated anchors which are questions that tap the same concept that experts believe have no DIF. Other researchers evaluate each survey question in turn by comparing it with an average, or

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<sup>30</sup> DIF occurs when examinees from different groups show differing probabilities of success on the item after matching on the underlying ability that the item is intended to measure.

factor analyzed weighted average, of all the others that measure the same concept assuming that all the other questions do not have DIF on average, as each question moves in and out of the standard comparison group, is internally inconsistent (Please see Appendix I-1 that shows the deviation within each country and appendix I-2 that shows the deviation between countries).

DIF statistical techniques are based on the principle that if different groups of test-takers have roughly the same level of something, then they should perform similarly on individual test items regardless of group membership. All DIF techniques match test takers from different groups according to their total test scores and then investigate how the different groups performed on individual test items to determine whether the test items are creating problems for a particular group or not?.

There are three hurdles to establishing DIF:

- ✓ Is the DIF statistically significant? (Please see appendix I-3)
- ✓ Does the DIF have substantive implications?
- ✓ Is the DIF real or accidental? (Please see I-4)

The one-sample Kolmogorov-Smirnov Test (appendix I-3) that compares the observed cumulative distribution function for a variable with a specified theoretical distribution shows that there are significant differences between the three countries. As well, the runs test (appendix I-4), that testifies whether the order of occurrence of two values of a variable is random or not, shows that there significant differences between the three countries. To simplify the calculation, the cut point in the one-sample Kolmogorov-Smirnov Test and runs test is number 3 ((the middle number of the likert scale:  $(1+2+3+4+5)/5=3$ ).

The abovementioned deviations could be explained by the following:

- ✓ The natural stone industry in Jordan is located in the factor-driven stage while the natural stone industry in Turkey is located in the investment-driven stage and in Italy it is located in the innovation-driven stage. The different locations of the

economic development stages explain, to some extent, why the Jordanians respond less in most of the cases.

- √ In recent times, the Jordanian government started to consider the natural stone sector as one of the most favorite industries. The Jordanians started to review the related rules and regulations, and provide the necessary infrastructure and information. Thus, the natural stone industry in Jordan is considered an infant industry in relative to Turkey and Italy.
- √ The experience of the Jordanian firms in creating industrial clusters, developing new products, utilizing the ICT in their production processes is relatively poor.
- √ As a result of the relatively weak factor conditions, demand conditions, and related and supporting industries, as well as the unclear strategic positioning of the firms working in the natural stone in Jordan, the performance (innovation, customer satisfaction, employee satisfaction and profitability) of the SMEs working in the natural stone sector is lower than Turkey and Italy.
- √ Above all, the inter-personal incomparability plays due to cultural differences.

## **5.8. Policy Options**

Based on SWOT matrix, the following policy options are developed.

### **5.8.1. Updating and Simplifying the Laws and Regulations**

There is a need to review, amend and modernize the current laws to make them more simple and helpful for starting new SMEs and for those already established. As an example, the Jordanian government should consider the impact of the investment promotion law and the different international agreements that mainly benefit the large firms in Jordan.

On 17/7/2003, the Council of Ministers in Jordan asked a team to analyze all of the laws and regulations related to the natural stone sector in Jordan to come up with new recommendations. The members of the team are representatives from the ministries of Finance, Agriculture and Environment, in addition to the Natural Resources Authority, Antique Authority, Police and the private sector. The team came up with new promising recommendations but still these recommendations need an official legislative ratification. As an example of these recommendations, the team suggested having a one-stop shop in order to save time, effort and money. The one-stop shop enables the investor to apply an application at the Natural Resources Authority, and after two weeks he will receive an answer without visiting the other related authorities.

### **5.8.2. Upgrading the Advanced and Specialized Infrastructure**

The Jordanian government should focus its efforts on the general infrastructure such as roads, water, electricity, airport and trains. At the same time, the advanced and specialized infrastructure that is necessary for the competitiveness of the firms working in the natural stone sector should be developed. There is a need to upgrade the water recycling system, feasibility studies, geological studies and other environmental treatment, in order to have a

cleaner environment and to protect the fauna and flora of Jordan. The introduction of modern environmental technologies and the application of proper environmental industry standards will result in huge savings for the owners.

### **5.8.3. Promoting the Entrepreneurship and Upgrading Personnel**

There is a need to integrate entrepreneurship at all levels of the formal education system and ensure access to information, skills and expertise relating to the entrepreneurship. The SMEs should cooperate with the local universities and research centers. It should also participate in international fairs and subscribe to specialized magazines in order to overcome the problem of not doing their own research and development. Vocational high schools and universities can work with lower-level schools to provide a general entrepreneurial curriculum to help build an entrepreneurial culture.

Box (5.1) shows that there is an interesting difference between how the entrepreneurs involved in the semi-structured interview in Jordan view themselves and the actual facts on the ground. The ten SMEs that are involved in the semi-structured interview are family-owned businesses in which the ownership is transferred automatically from father to son or to another close family member.

#### **Box 5.1**

Where as the majority of the SMEs involved in the semi-structured interview in Jordan perceive themselves as very good in administration, finance and marketing, their skills do not seem to have much impact on the way they conduct their business. This suggests that most of these studies follow old traditional methods of doing business which emphasis the necessity of training for the SMEs' owners and managers. A major reason behind the lack of proper managerial competence may be explained by the fact that the overwhelming majority of businesses in Jordan are family enterprises. However, inheriting the job does not necessarily mean that the candidate must be exempted from proper training.

There is a need to provide tailor-made consulting and training services for people working in the natural stone sector. The training should focus on the managerial and technical sides. The managerial training should have the basics in management, strategic management, decision-making, accounting, production management, quality management, purchasing management, inventory management, technology management and marketing. The technical training should focus on the extraction methods, stone cutting method, finishing method and quality control. The Royal Scientific Society in Amman could be the right place for building a test center especially that it is in the way of acquiring an international accreditation for this kind of tests. The main goal is to improve and maintain the quality of the stone and marble production in order to better present the sector in the local and the international markets.

It is important to consider the certification of private individuals who provide management consulting and technical assistance services to the SMEs. The goal of this certification is to ensure that the professionals providing such services are properly trained and capable of providing useful assistance. Several countries have similar systems. Japan has a certified small business consulting program that calls for an additional year of specialized training following a master of business administration degree, plus few years of experience, with or consultant to smaller enterprises (Oxford Business Group 2003). The United States has recently started a similar program operated by the Small Business Development Centers Directors Association. This certification program has been developed after approximately 20 years of experience in operating small business development centers (OECD 2004).

#### **5.8.4. Establishing Credit Institutions to Support the SMEs**

Although there are many banks and insurance companies in Jordan, there is a need to establish credit institutions to support the SMEs by soft loans. The insurance companies furthermore should pay their attention towards the small companies in order to protect them in case of any risk of devaluation or political changes. The government's financial

support for the SMEs should be based on the presumption that banks cannot serve the needs of smaller enterprises without government intervention. The SMEs that fall within the scope of the government aid program can receive direct or indirect credit, an exemption from certain import duties and from payment of value-added taxes on investments in equipment. While the SMEs' financing requirements differ at each stage of development, policies should aim to ensure that markets can provide financing for credit-worthy SMEs. This means that the innovative SMEs with good growth prospects have access to appropriately structured risk capital at all stages of their development.

#### **5.8.5. Promoting E-Business in the Natural Stone Industry**

The Jordanian government should understand the obstacles of using the new technology by the SMEs and set the required policies to eliminate these obstacles. There is a pressing need to alert business owners and managers to the importance of the computer technology in modern business and the role of the computer in simplifying and facilitating business transactions and in improving communication. The SMEs should use a customized packaged Internet application appropriate for their particular strategies. Using ready-made packages and the Internet can be introduced in the SMEs' businesses stage by stage (Porter 2001). The Jordanian government may succeed in information technology promotion, but still there is a need for information technology training, legal framework for information technology development and creating laws relating to the Internet use.

The procurement process of the SMEs working in the natural stone sector in Jordan is still predominately based on traditional approaches, tools and communication channels. The proposed approach is to promote B2B e-commerce by using the electronic bidding. The objective of the electronic bidding solution is to overcome the drawbacks of the traditional procurement by providing:

- ✓ Quick access to up-to-date product information (i.e. automated update of company's local product data and search facilities),

- ✓ Improved product characteristics including color information and common product identifiers to support the selection of the "right" product,
- ✓ Advanced price requests for negotiation support, and
- ✓ Direct ordering and invoicing of product components defined in the bidding process.

The semi-structured interviews investigate the impact of the ICT on the five competitive forces, as shown in Box 5.2, in order to investigate the impact of the ICT on the threats of the natural stone industry.

**Box. 5.2.**

Four firms, involved in the semi-structured interview in Jordan, showed that the threat of rivals will increase due to the increase in the number of competing firms. The customers then will have the ability to look for the competitors' prices through the Internet by one click. On the other hand, six firms explained that the threat of rivals will decrease. They believe that few Jordanians are able to buy directly from foreign companies due to the economic circumstances and trade restrictions i.e. import procedures and high transportation costs. As well, they do believe that there is a limited number of Jordanians who have the willingness to take the risk and to buy through the Internet. Five firms showed that the Internet will increase the bargaining power of the local buyers especially the Jordanians who have money and have the willingness to buy through the Internet. At the same time, the Internet provides the overseas buyers with an easier access to the Jordanian products. Six of the firms expected that the Internet is going to decrease the bargaining power of physical intermediate channels since the customers can buy immediately from the supply. At the same time, the six firms expected that new electronic inter-mediators (electronic brokers) will be created.

The bidding system will automat and synchronize the product data with the respective information provided by the broker. Instead of contacting several quarries, the SME can specify a request and send it electronically to the broker service and receive a list of matching components in return with price comparisons. The broker service can provide standardized product identifiers and precise color information. The natural stones are mainly purchased by color and pattern. Samples have to be exchanged physically to get an idea of the stones' look. Once the appropriate existing techniques have been identified, advanced selection features for stones are possible, e.g. color matching mechanisms for finding stones in a certain color or color range or checking whether a new series of natural stones still has the same color as its predecessor series.

As shown in Box 5.3 the SMEs involved in the semi-structured interviews were asked about the impact of the ICT on the value chain of these firms in order investigate the impact of the ICT on the internal businesses.

**Box 5.3.**

The owners/ managers of the ten firms use the Internet to communicate but not yet to make decisions. A full decision support system is not present yet in any of the ten SMEs. In addition, none of the firms have been automated an interface with their customer and only four SMEs using automation in another area of the company. This automation is on a very low scale and not directly related to the implementation of the e-business. However, the ten firms agree that the waste within their firms has decreased; the burden of general office work, data handling and keeping of archives has become easier. Nevertheless, in most firms the archives are not digital yet. Although none of the ten firms using the Internet in their internal businesses transactions or conducting financial transactions with banks, they believe that the Internet will eliminate redundancies, reduces cycle time and increases the ability to innovate. Furthermore, all of the firms believe that the Internet will help in improving the image of their firms, adding value to existing products through the information content and contributing to solving the problem of lack resources and access to technology.

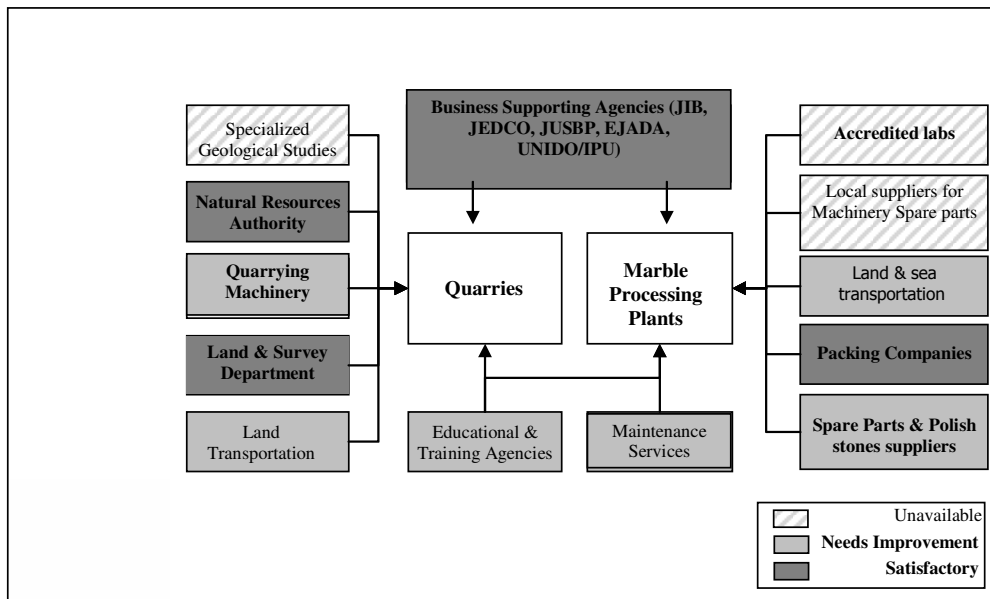
### 5.8.6. Building a Dynamic Natural Stone Cluster

In order to evaluate the existing cluster, there are four questions need to be answered:

- ✓ Does the cluster have critical mass?
- ✓ Is the cluster specialized?
- ✓ Is the cluster productively efficient?
- ✓ Is the cluster dynamic?

Figure (5.13) presents the current natural stone cluster map (the area that need improvements and the satisfactory area).

**Figure. 5.13. Current Natural Stone Cluster**



*Source: JMOP 2003*

The above figure shows that specialized geological studies, accredited labs, and local suppliers for machinery and spare parts are unavailable in Jordan. While, quarrying machinery, transportation, training agencies, maintenance services, and spare parts suppliers are there but need improvements.

The ten SMEs that are involved in the semi-structured interview in Jordan were asked whether they are working within a network or not? Box 5.4 presents the answer.

**Box 5.4.**

Six of the SMEs are working within a larger network of suppliers, intermediaries and competitors. The owners/ managers of these firms believe that working in a networking will help in entering new markets, increasing market share, increasing performance, decreasing costs, increasing specialization, increasing information sharing, and increasing profits. The owners of the other four firms fear of losing power over the network, lack of commitment and fear of losing customers. The SMEs that are working within a network show that the following characteristics are needed in building a dynamic cluster:

- ✓ Intense cooperation organized through various institutions for collaboration such as chambers of commerce, JOSTONE, etc.
- ✓ Intense rivalry with a continuous upgrading and change.
- ✓ Linkages to related industries, sharing pools of talent and new technological advancement.
- ✓ Access to increasingly specialized and advanced factors of production.
- ✓ Proximity to sophisticated and demanding buyers.

The natural stone cluster represents 15-20% of the Jordanian manufacturing employment i.e. people working in the quarries, stone cutting firms, construction, building material firms, ... (JMOP 2003). In the 1990s, Jordan Stone and Title Exporters Association (JOSTONE) had a background in recommending methods of successful export markets entry and assisting in this process. The idea to set up the cluster initiative had been taken over by the Jordan-United States Business Partnership (JUSBP). The JUSBP is a program operated by the International Executive Service Corps (IESC) headquartered in Washington D.C, USA, and is funded under a Cooperative Agreement with the United

States Agency for International Development (USAID) mission in Amman, Jordan. The Industrial Development Directorate (IDD) of the Ministry of Industry of Trade (JMOIT) is JUSBP's counterpart organization. On the basis of this experience emerged the need for more sophisticated information services provided.

Till now, the cluster initiative is not a self-sustainable. There is no strong involvement of local actors and there is no profit orientation on the part of the JOSTONE. The success of this case depended partly on a strong vision shared among the various promoters of the initiative and the strong commitment of the government.

### **5.9. Three-level Approaches**

In order to build a sustainable competitive advantage for the SMEs working in the natural stone sector, all of the entities (the SMEs, related and supporting industries, and government) should work together in order to achieve this objective.

#### **5.9.1. The SME - Level**

The research results reveal a number of serious shortcomings and inadequacies that should be addressed by the owners of the SMEs themselves. The study revealed the lack of experience in the form of strategy formulation and market analysis. This could be due to the low educational level of many of these entrepreneurs and the lack of a modern business perspective on their part. This situation has had a negative impact on the way many business owners practice on their daily activities.

Obsolete managerial practices are still in use. The continuation of this state of affairs in a globalized economy may be disastrous for the small business. The research findings reveal that the level of technology applied in the Jordanian businesses is relatively low, particularly with regard to the use of computer information systems in collecting, processing and analyzing data. It is not clear whether this is caused by a lack of funds or ignorance on the part of owners and managers. In both cases, however, there is a pressing need to alert business owners and managers to the importance of computer technology in modern business and the role of the computer in simplifying and facilitating business transactions and in improving communication.

In the light of the aforementioned facts, it is imperative that extensive training should be carried out for both potential and operating entrepreneurs. The curricula of the training courses designate to fit the special needs of the Jordanian business owners and managers.

### 5.9.2. Related and Supporting Industry-Level

Jordan has a limited experience with building clusters and should be able to extend the concept in new directions. In order to promote a healthy and dynamic cluster that affect the competitiveness of the natural stone sector the satisfactory and unsatisfactory elements are highlighted in figure (5.12). The approach should keep in mind the following:

- ✓ Invest in strengthening microeconomic foundations - four determinants of the Diamond;
- ✓ Use of information and communications technology as an enabling technology and as a indication of growth and economic change to improve production and innovation
- ✓ Cultivate trust, innovation and creative environment
- ✓ Extend innovation and upgrading for the entire value chain.

The government can encourage clustering by offering an improved infrastructure and other incentives to producers and related service providers to locate in a designated area. The government can facilitate cluster development by providing an institutional framework that allows cluster participants to form, grow and discuss mutual needs and interests. The private sector and business associations can identify barriers and opportunities, propose legislative and policy changes, and collaborate with research and educational institutions to translate research and development and technological advances into commercial applications. Development agencies can play a pivotal role by providing research, training and funding to promote the development of natural stone sectors.

In the proposed natural stone cluster model (NSCM) as shown in figure (5.14), the board, led by the related ministries and authorities, in a consensus framework with involved organizations (professional associations, educational-training, technical and financial support organizations and related ministries). The cluster can promote productivity, innovation and competition in a number of ways, e.g., the reduced cost of sharing resources, the critical mass created by having a pool of specialized skills, expertise and

value-added products. The cluster enhances economic foundations such as a skilled workforce, research and development capacity and infrastructure, and thus creates assets such as trust, synergy, collaboration and cooperation, which are all essential for competitiveness.

The main proposed objectives of the natural stone cluster are:

- ✓ Establishing networks among firms
- ✓ Promoting innovation and new technology
- ✓ Creating brands for the Jordanian products
- ✓ Providing business assistance, management and training
- ✓ Enhancing production processes and establishing technical standards
- ✓ Providing incubator services
- ✓ Promoting exports from cluster
- ✓ Lobbying the government within the cluster and improving regulatory policy
- ✓ Coordinating purchasing

#### 5.9.2.1. Board of the Natural Stone Cluster

The board of the cluster consists of the following bodies:

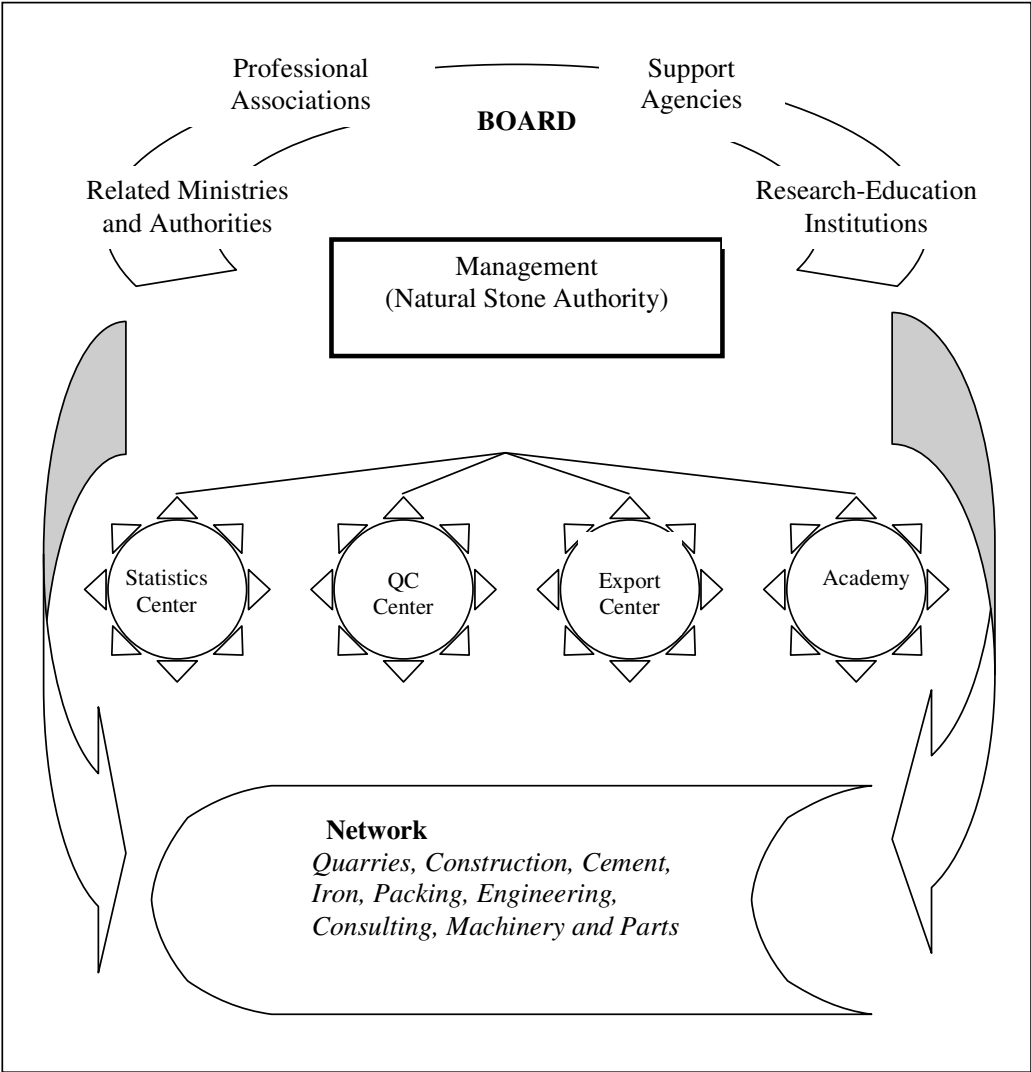
##### ***Related Ministries and Authorities.***

The related ministries and authorities are: the Ministry of Planning, the Ministry of Industry and Trade, Ministry of Finance, Ministry of Labor, Natural Resource Authority, Land and Survey Department, Local Authorities, Central Bureau of Statistics, Police, and Investment Promotion Authority.

The Jordanian Ministry of Planning (JMOP) formulates long-term development programs that include policies for the SMEs. The Ministry of Industry and Trade is the primary authority for defining SME policies and implements policy. It performs a coordination function between public and private bodies in order to implement these policies as effectively as possible. The SME department at the Ministry implements the SME

policies with the aim of supporting their growth and development in Jordan carries out the necessary development and support programs for the following functions: developing SMEs’ technological skills, improving their training and information levels, providing appropriate managerial and financial mechanisms.

**Figure 5.14.The Natural Stone Cluster Model (NSCM)**



A recommended method for ensuring better policy coordination within the government is to consider creating a high-level SME advocate position (or small office) within each ministry or major government organization. It would be the responsibility of each advocate to identify policies and procedures that might have significant effects on SMEs so that these could be reviewed properly within each organization and cooperative with the management of the cluster and outside professional organizations where appropriate.

### ***Professional Associations***

The professional associations are: Chambers of Industry and Commerce, Engineering Association, and JOSTONE. The professional associations play an important role in formulating the policies of the SMEs that work in processing the natural stone in Jordan. JOSTONE should be able to promote and sell Jordanian products as a stable, reliable trading partner and upgrading the technical capabilities and facilitate the export activities of the Jordanian stone companies to international markets.

The establishment of business associations was primarily driven by the need to consolidate the SME efforts to push for regulatory changes that facilitate the operations of the SMEs. Most of the operational business associations, however, have small membership and lack resources. As such, they were neither very successful in policy advocacy efforts nor very helpful in providing members with development services. Separately, they were only able to address short-term and small-scale problems, which do not pursue initiatives addressing fundamental issues for SMEs, such as creation of a more business-friendly legislative environment. For this type of initiatives, many Business associations acknowledge the necessity to cooperate with other Business associations. Most of them agree that there is a lot of potential in the business community of Jordan, this has not been fully understood or utilized at present.

Advanced forms and activities of business associations, such as business promotion and lobbying may be achievable only if members of business associations have a strong intra-organizational relationship. Thus, provision of technical support and intensive training are the highest priority in formation of the effective business associations.

### ***Support Agencies***

The support agencies are: Jordan Electricity Co., Water Co., Land and Sea Transportation, Export Supporting Agencies, and Business Supporting Agencies. The business development service is relatively new in Jordan. During the 1990s, there were few centers and companies that provide professional training services on a regular basis. A small group of companies provide more advanced and sophisticated training courses (such as Management Information System, Risk Management, Business Process Reengineering, etc.) to a rather limited target group. At present, there are almost all kinds of consulting companies and services in Jordan, which may be required for the SMEs. The demand side is much less developed, although it tends to grow. Great majority of the SMEs have never used business-consulting services and never paid for them. The Jordanian consultancy market remains heavily dependent on programs and projects funded by the donating organizations.

### ***Research-Education Institutions***

Examples of the research-education institutions are: Royal Scientific Society, University of Jordan, Vocational Schools and Research centers and Geological Centers. The research centers and universities should conduct applied economic research to examine the impact of the policies and regulations on the competitiveness of the SMEs. University business schools have provided vast amounts of services to the SMEs in many countries, often with support through government-sponsored small business development centers that provide outreach and coordination with university management specialists.

In Jordan, there is poor evidence that R&D specialists are occasionally invited by the SMEs to consult on production technology problems. The negative developments in the R&D have weakened the opportunities for the emergence of consulting and marketing services in the areas of product and technology innovations for the SMEs. Moreover, if and when the R&D is restructured and properly funded, it can only function as an innovation source for predominantly large companies due to the high cost of R&D. To

support the SME competitiveness and export opportunities, technology development and dissemination programs are to be vital components for the SME development strategies.

#### 5.9.2.2. Management of the Cluster

The Natural Stone Cluster should be an independent, non-profit and private membership based organization. The Natural Stone Cluster serves as a gateway to the capacities of the sector and of the individual companies. The main roles of the management of the NSC:

- ✓ To represent the natural stone in Jordan in its relationships with the government and various agencies through effective dialogue and reasoned advocacy of the needs and concerns of the members.
- ✓ To advise the government on needed public infrastructure for the sector.
- ✓ To encourage the development of the skills needed to promote stone production and export development through training courses on standards and quality, packaging, safety, delivery, marketing.
- ✓ To identify key target markets, and to establish sector representation points in those markets.
- ✓ To serve as the principal contact point for those who seek investment and opportunities in natural stone in Jordan.
- ✓ To participate in the worldwide network of exhibitions and conferences related to the stone industry.
- ✓ To establish a center for information on the Jordanian stone industry with links to other similar data base world wide.
- ✓ To promote and support locally, regionally, and internationally the interests of its members and to provide such services to members as seem necessary for the achievement of these objectives.
- ✓ To carry out studies with the purpose of securing production of natural stone reserves in a productive way.
- ✓ To provide qualified and readily available services to the SMEs in order to help them produce their goods and services to high quality standards, at low prices and using advanced technologies.

- ✓ To help in eliminating all of the obstacles that the SMEs might confront while competing with the domestic and foreign markets.
- ✓ To increase the SMEs technological expertise by encouraging these firms to carry out successful R&D projects, utilizing available support from universities, larger firms and technological resources throughout the world.

#### 5.9.2.3. Centers

In order to achieve the targeted objectives of the proposed cluster, the following four centers are recommended:

##### ***Statistics Center***

The main aim of this center is to strengthen the relation with the members. The center will help in building the nucleus base for any study about the stone and marble industry in Jordan through analyzing the collected data. The roles of this center are:

- ✓ To establish and update the database for businesses working in the natural stone industry across Jordan and the world.
- ✓ To gain a comprehensive understanding of the effects of the present political situation has on the performance of natural stone manufacturers in Jordan
- ✓ To consolidate the membership of registered businesses.
- ✓ To expand the membership base by recruiting new members.
- ✓ To increase financial returns by collecting membership fees from registered businesses and new members.

##### ***Natural Stone Academy***

The academy provides education, research and training for the natural stone sector in Jordan. It works on the development of the natural stone industry through establishing a study center to be specialized in stone and marble studies. It will also conduct a series of educational and training programs. These programs facilitate stone and marble entrepreneurs from all over the country to work together in an environment of sharing,

and to expand their common interests in stone and marble industry. It will, furthermore, promote an advancement of the stone and marble industry through emphasizing technical stone fabrications and maintenance, business, stone design, mining techniques, geological studies, quality control, and safety and health.

The Academy will be committed to expanding the community's awareness of stone and marble industry. It will also promote the use of natural stone, and will be the authoritative source of information on the standards of workmanship and practice and suitable application of stone products. This center serves nearly 1,500 companies and firms including producers, exporters/importers, distributors/wholesalers, fabricators, finishers, installers, and industry suppliers all are committed to the highest standards of workmanship and ethics.

The activities of the Academy include, but not limited to, delivering professional technical opinion to the beneficiaries, publishing technical information, educating factory owners, workers and other design professionals, sponsoring industry awards, examining new and improved uses of dimension-cut natural stone, developing specifications for proper fabrication and installation of natural stone, and maintaining liaison with other professional associations and government agencies to facilitate and increase the spectrum of services offered to the community. Many of the academy's objectives will be met through conducting valuable studies, offering professional diplomas and short training programs, producing and distributing numerous publications such as the dimension stone design manual, which contains technical information and definitions for natural stone. Furthermore, it will publish a monthly newsletter, and issue technical advisories updating the industry on current issues and activities.

### ***Quality Control Center***

Stone and marble industry addresses quality. The proposed center includes a laboratory equipped, in cooperation with the Royal Scientific Society, with all the necessary tools to conduct various quality tests. It will provide training, consultations and counseling to the stone factory owners and workers. The main purpose of this center is to improve and

maintain the quality of the stone and marble products in order to a better presentation of the sector in local and international markets.

### ***Internationalization and Export Promotion Center***

The management of the cluster should emphasize the quality of the products and the quality of production processes so that more Jordanian products meet international standards. Furthermore, as the Jordanian market continues to develop, more and more small businesses will direct their primary production towards meeting the demand from larger Jordanian businesses. Jordanian SMEs that produce high-quality components and sub-assemblies for larger manufacturers could help the latter to become more competitive in the international markets.

This center is aimed to remain physical and on-line, exhibitions and fairs of locally manufactured products. This facility will provide an environment where wholesalers and customers from Jordan and other countries can visit, thus allowing for more efficient exchange of information on market demand. This approach is one of the tools to ease the sales efforts of the local producers by helping cut costs. It helps in the understanding of the needs for improved packaging and branding policies, as they see and experience a more efficient and transparent marketplace.

#### **5.9.2.4. Network of the Cluster**

In order to build an effective and dynamic cluster, the SMEs that work in processing the natural stone in Jordan should build a network with construction firms, cement and iron agencies, packing agencies, engineering offices, machinery producers and importers, maintenance workshops, export/import agencies and consulting firms. The combination of services and support provides broad support to the SMEs looking to improve their production, marketing and export capabilities. The SMEs can receive management and technical assistance, access to capital, R&D and management training. They also receive assistance in recruiting and managing personnel and some help for hiring skilled workers. Small businesses are very reluctant to bring in outside consultants, particularly if they

have to pay the market rate for such services. Lowering the price of services (through subsidies) may help to overcome this reluctance.

The management of the cluster should cooperate and work closely with the international and national donors in order to organize the funding process according to the priorities of the sector. Some of the current projects supporting the SME in Jordan:

- ✓ National Fund for Enterprise Support (NFES), Japanese Fund
- ✓ UNIDO – IPU, Italian Fund
- ✓ Jordan - United States Business Partnership (JUSBP, US Fund
- ✓ Euro – Jordanian Action for Development of Enterprise (EJADA), EU Fund
- ✓ EMPRETEC, MED2000, Italian Fund
- ✓ National Fund

It is necessary to create mechanisms to distribute legislative changes with the appropriate comments and interpretations to the SMEs. The approach is aimed at keeping interested businessmen updated of the relevant regulatory amendments. It also keeping relevant government agencies informed of entrepreneurs' feedback. Round-table discussions where the participants can focus on the implications of these amendments to their business operations lead to a longer-term development approach of this mechanism. To further facilitate the discussions, workshops will need to be conducted in order to exchange experience and lessons learned.

#### 5.9.2.5. New Start-Ups

The management of the cluster should have several programs to support entrepreneurs with new start-ups. The general goals of these programs include informing entrepreneurs about the investment environment, providing sector-based plans and market research, and help with business planning and the strategic approach to business growth and development. The development of one-stop centers can provide information to both new and existing businesses. The centers can provide application forms for various permits or licensees and can act as networking agents, providing information about the availability of both public and private support services. At present, Jordan lacks the financial

infrastructure to support start-ups. Even if the infrastructure was in place and the funds were sufficient, banks are usually reluctant to fund start-ups because the entrepreneur usually has no established track record, and the business start-ups are risky.

### **5.9.3. Government-Level**

At a time of extremely tight budgetary constraints, the need to optimize resource allocation among the various support programs of varying sizes will force the SME policy makers to prioritize carefully. They will have to evaluate programs both before they are formulated and adopted (*ex ante*) and to measure the effectiveness of existing programs (*ex post*) in order to assess their relevance and to compare the cost-effectiveness of the use of resources.

The evaluation process to be undertaken by the government should address both the direct and indirect effects of each program as well as the effectiveness of program implementation. It should be done using evaluation methods and tools such as cost-benefit analysis, economic impact analysis, econometric analysis, peer review, and case studies.

The government policies for supporting the SMEs should be coherent at the international, regional and local levels and they should include:

- ✓ Stable macroeconomic policies. Such as competition, international trade and investment, financial markets, labor markets and education.
- ✓ Enabling regulatory frameworks taking into account the needs of the SMEs.
- ✓ Promoting laws and systems that support the development and diffusion of new technologies in ways that enable and encourage SMEs to take full advantage of them.
- ✓ There is a need to reduce barriers to the SME access to global markets.
- ✓ There is a need to develop a strong “evaluation culture” in ministries and agencies responsible for SME policies and programs.

- ✓ An evaluation of the existing loan schemes should be undertaken. The evaluation process should also look at the costs and benefits of loans made by banks supplied with government credit.

The question of who undertakes these evaluations is important, as it is necessary to bear some potential conflicts in mind. Ideally, those undertaking the evaluations should be independent of those responsible for the programs, as in any audit role. At the same time, a key role of evaluation is to contribute to continuous policy improvements, and the evaluators need the active cooperation and involvement of both policy makers and deliverers. This may be more difficult to achieve if the evaluator is viewed as an outsider.

### ***Examples of Cluster Development Initiatives***

In the United States, state and local governments have had prominent roles. In several instances, state or local governments have created a process that has been taken up by the private sector. In Arizona, for example, a commission set up by the Governor initiated a process of identifying clusters in the state at local universities and bringing together relevant actors from the private sectors. Cluster organizations were then formed to assess and address the constraints and opportunities facing individual clusters. These organizations have come to encompass members from a specific set of industries, suppliers, customers, consultants and universities. Although seed funding came from the government, the subsequent growth and development of the cluster organizations has largely been led and funded by the private sector.

In Italy, the typical practices have been for regional or local governments to work with industry associations and local organizations such as financial institutions, research centers and universities. Several regional governments have departments or key individuals devoted to cluster development. Local universities, research institutes, service centers and financial bodies contribute to the process. These actors have also been instrumental in the founding and development of specific organizations that work to identify and overcome the problems and constraints that the clusters face.

In the United Kingdom, cluster development initiatives have generally been promoted by regional development agencies or organizations. In Scotland, Scottish Enterprise has developed a top-down approach in which the agency has selected a number of clusters for inward investment promotion, local linkage programs, and training and research support. In Wales, the Welsh Development Agency has led similar efforts to attract plants for foreign firms and then develop a local supplier base to support these firms. In Northern-Ireland, a private-led effort linked with local government agencies and government funding has identified a rather diffuse set of clusters for support.

The Netherlands has engaged in extensive cluster studies over the years. These have fed directly into government policy and programs based mostly on efforts to upgrade the technological capabilities of Dutch firms. The Dutch government has identified three rationales for cluster-based policies: market failures and externalities; rates of return on research and development that are higher for society than for private sector companies; and the potential to match private needs with publicly funded research. Specific approaches have included improving overall economic conditions, network broker policies, and using government procurement as a stimulus to cluster development.

### **5.10. Economic Development of the Natural Stone Industry in Jordan**

The natural stone industry in Jordan is positioned in the factor-driven stage (JMOP 2003). The industry draws its advantage almost from the basic factors of production; natural resources and inexpensive semi-skilled labor pool (JMOP 2003). Moreover, there is a gap between environmental attitudes and subsequent behavior of the firms working in the natural stone sector in Jordan. This could be explained by the perceived irrelevance of environmental issues to small organizations, a lack of organizational capacity for change, and limited access to finance and information.

The SMEs solely compete on the basis of price, technology sourced largely from Italy, Germany and Turkey. As well, very few SMEs have direct access to foreign markets. However, Jordan should think seriously to shift the sector to the innovation-driven stage. The shift to an innovation-driven stage implies many changes: a new mindset, and new ways of doing things in production, marketing and buying. It is very important to ensure that people's skills, investment capital, technology, infrastructure, business climate and quality of place support the transformation. The innovation-driven is about moving away from traditional ways of thinking, doing business and moving into a new constantly changing dynamic (Porter 1990).

In order to drive the state of the art in product and process technology, marketing, and other aspects of competition, there should be an availability of necessary conditions to achieve that. The Jordanian should create favorable demand conditions, specialized and advanced factor conditions, and a dynamic cluster in order to push the SMEs working in the natural stone sector to innovate. These firms should compete internationally in more differentiated segments by competing with self-contained global strategies along with growing brand reputations. Moreover, a growing international position in sophisticated services- such as advertising- is also essential for innovation (Porter 1990). However, the Jordanian government should carefully stimulate the creation of more advanced factors, and improving the quality of local demand.

The question raises is whether the Jordanian natural stone industry can jump to the innovation-driven stage without passing by the investment-driven stage or not?

In the investment-driven stage, national competitive advantage is based on the willingness and ability of a nation and its firms to invest aggressively (Porter 1998). Firms invest to construct modern and large scale facilities equipped with the best technology available on global markets. As well, these firms should compete in more sophisticated industries and industry segments, establish some international marketing channels of their own, and should be able to absorb and improve foreign technology. At the investment-driven stage firms invest in the principal advantage rather than the ability to offer unique products or produce with unique processes. As well, these firms still compete in the standardized and price-sensitive segments of the relatively large market (Porter 1990).

The above mentioned characteristics prove that it will not be feasible for the Jordanian natural stone industry to move to the investment-driven stage for different reasons. Majority of the firms working in this sector are small ones thus, they can not heavily invest to construct large scale facilities. As well, it will be costly for these firms to establish their own international channels and to improve foreign technology. In addition, the quantity of natural stone in Jordan is relatively limited therefore; there will be no places for large scale plants.

### **5.11. Summary**

The analysis of data shows that there are significant differences in all of the competitive forces confronting the SMEs working in processing the natural stone industry between Jordan, Turkey and Italy. The data shows that Jordan almost has the lowest rank in the factor conditions, demand conditions, and related and supporting industries. As well, the data shows that the Jordanian SMEs have the highest threats in the five competitive forces.

In light of the analysis, there are some areas which require more attention for the Jordanian economy, such as maintaining macroeconomic and political stability, conducting institutional reforms to smooth the functioning of the bureaucracy as well as the financial markets, and improving the general transportation and communication infrastructure. Moreover, the government and industry participants should act together, although the bulk of the responsibility has to be assumed by the government since Jordan is in the early stages of the development process. The SMEs, on the other hand, should take a more proactive role in education and development and promote industry-specific education and research institutions. Similarly, industry associations should participate in developing specialized skills, technology and infrastructure, and constitute a bridge between industry and educational institutions.

The SMEs in Jordan must understand what is about their home nation that is most crucial in determining their ability, or inability to create and sustain competitive advantage. These firms gain competitive advantage where their home base allows and supports the most rapid accumulation of specialized assets and skills, and when their home base affords better ongoing information and insight into product and process needs. Moreover, the Jordanians should be aware that nations succeed not in isolated industries but in clusters of industries connected through vertical and horizontal relationships.

The analysis of data shows that the individual relationship preferences are not the reasons for pushing the SMEs working in processing the natural stone sector in Jordan to act individually or in partnership. Other reasons should be taken into considerations such as

starting and closing a business, enforcing contracts, protecting investors, getting credit, registering property, and hiring and firing workers.

Development specialists often focus on helping poor countries to become richer by improving primary education and infrastructure such as roads and telephones. That's surely sensible. Unfortunately, it's only a small part of the problem. Education, infrastructure, and factories only begin to explain the gap between rich and poor whereas the problem of twisted rules and institutions explain the main part of the gap.

The analysis of data shows that there are significant differences in the influence of the generic strategies on the competitive advantage of the SMEs working in processing the natural stone in Jordan, Turkey and Italy. The SMEs must choose a position within the industry. Positioning embodies the firm's overall approach to competing. The data shows that implementing the low cost strategy with high differentiation leads to the highest rank in innovation, customer satisfaction and financial performance.

The analysis of data shows that there are significant differences on the impact of the ICT on the competitive elements between the three countries such as cost, quality and flexibility. Jordan has the lowest rank due to different reasons such as the business environment, infrastructure, skills, information and competition. Despite the obvious benefits of the ICT, uncertainty exists about the implications of the ICT and its likely rate of diffusion. The ICT may boost productivity by increasing the efficiency of the procurement system, strengthening inventory control, lowering retail transaction costs, and eliminating or transforming intermediaries.

The nascent condition of the ICT diffusion in Jordan depends on the availability of telecommunications services. The quantity and quality of telecommunications services provided in a country is a significant determinant of the existence of the ICT connections and the level of its use. Thus the government in Jordan has an important role in speeding the ICT diffusion. Inappropriate policies and the lack of complementary services, particularly affecting the telecommunications sector, other infrastructure, human capital, and the investment environment severely constrain the ICT access.

Based on the strengths, weaknesses, opportunities and threats (SWOT) analysis, and analysis of labor productivity, six policy options have been developed in order to improve the competitive advantage of the SMEs working in the natural stone sector in Jordan. These policy options are: upgrading and simplifying the laws and regulations, upgrading the advanced and specialized infrastructure, promoting the entrepreneurship and upgrading the personnel, establishing credit institutions to support the SMEs, promoting e-business in the natural stone industry, and building a dynamic natural stone cluster. These conclusions could be realized at three levels: SMEs-level, government-level, and related and supporting industry-level.

A proposed natural stone cluster model (NSCM) has been developed. The board of the model is led by the related ministries and authorities in a consensus framework with involved organizations (professional associations, educational-training, technical and financial support organizations and related ministries). It is essential that the management of the natural stone cluster should be independent. This cluster serves as a gateway to the capacities of the sector and of the individual companies.

## **CHAPTER SIX**

### **CONCLUSION AND FUTURE RESEARCH**

In this chapter, the researcher highlights the main results and discusses them in section 6.1. Limitations are discussed in section 6.2. Finally, recommendations for future research are presented in section 6.3.

#### **6.1. Main Results**

For thousands of years, the people of Jordan have created beautiful and practical works from their native stone. The most famous is the Rose-Red City of Petra, which is one of the world's greatest architectural wonders. In the 60s and the 70s of the last century, Jordan started to import marble and granite from different countries like Italy, Spain and Portugal, and processing the product locally and selling it to the domestic and regional markets. In 2005, 240 firms operated and were registered in the dimension of stone and marble sector. The industry is dominated by small sized enterprises that constitute 96% of the sector, employing about 61% of the total industry workforce.

Many of the countries have used their natural resources as a tool to accelerate economic development and to increase their competitiveness. The performance depends on the macroeconomic and microeconomic foundation of the nation. However, the long-term benefits do not come from the presence of the natural resources themselves but rather

from the value-added products and services developed around them. On the other hand, the emergence of the information and communications technologies (ICT) has changed the dynamism of many sectors (E-Economy Conference 2001). In Chile, for example, an Internet network among farmer organizations has dramatically increased farmers' incomes by providing information about crop status, weather, global market prices and training. As well, the ICT facilitates global connectivity, resulting in new ways of creating and delivering products and services on a global scale. New business models and market configurations enabled by the ICT, including business process outsourcing, value chain integration and disintermediation, provide developing countries with access to new markets and new sources of competitive advantage from which to drive income growth.

Although, a sound macroeconomic, political, legal and social context creates the potential for competitiveness, it ultimately depends on improving the microeconomic capability of the economy. The microeconomic business environment plays a critical role in driving innovation and the upgrading of competitive advantage by a nation's firms. Porter's diamonds (1990), taken individually and as a system, create a context in which a nation's firm is established and able to compete.

The five competitive forces determine the profitability and attractiveness of the industry. These forces are important in shaping the prices that firms can charge, the costs they have to bear, and the required investments to compete within the industry. As well, the competitive advantage depends on the way the firms organize and perform their activities. The activities performed, when competing in a particular industry, can be grouped into categories as these activities can be divided broadly into primary activities and support activities.

In Jordan, the research and development intensity in the natural stone sector is very low and most of the laws and regulations applied concerning the natural stone industry are antiquated, excluding some few ones. There is a scarcity in the availability of information regarding the local and international markets, efficient production technology, geological studies, international trend and international competition. In addition, the SMEs in Jordan

suffer from the lack of funding, adequate use of management and control systems, and ability to access consulting services.

### **6.1.1. Research Hypotheses**

The results of this study will be discussed in the same order of the research hypotheses:

*The findings rejected the first hypothesis. The analysis of data shows that there are significant differences in all of the competitive factors confronting the SMEs working in the natural stone sector between Jordan, Turkey and Italy.*

Jordan has the lowest rank in comparison with Turkey and Italy in terms of acquiring capital, availability of information, bureaucratic rules and regulations, infrastructure availability, infrastructure cost, providing consistent stones in huge quantities, and availability of technical qualifications. Turkey has the lowest rank in the stability of the economic and political environment, and market accessibility. In addition, there are significant differences between the three countries in the local and international demand, image of the stone, and the awareness and sophistication of the customers. The data shows that Jordan has the lowest rank, in comparison with Turkey and Italy, in all of the demand conditions except in the local demand.

There are significant differences in the relations with banks, insurance firms, research centers and universities, local manufacturers, public institutes, government, stone cutting firms, and firms working in other sectors. Jordan has the lowest rank, in comparison with Turkey and Italy, in all of the abovementioned elements except in the supplier-buyer relationship. Additionally, the analysis of data shows that there are significant differences in the five competitive forces between the three countries. Jordan suffers a higher threat in comparison with Turkey and Italy in the intensity of rivals, new entrants, bargaining

power of buyers and suppliers while Jordan has the lowest threat in substitute of products.

*The analysis of data rejected the second hypothesis. The individual relationship preferences are not the reasons for pushing the SMEs working in the natural stone sector in Jordan to work individually or in partnership.*

The Kruskal-Wallis test shows that the individual relationship preferences are not the reasons for pushing the SMEs in Jordan to work individually or in partnership rather than in companies. The analysis of data shows that Jordan has the lowest rank in comparison with Turkey and Italy in the relationship between the SMEs with banks, insurance companies, research and training centers, local manufacturers, public institutes, stone cutting firms and the relations with firms from other sectors.

Other reasons should be taken into considerations such as the macroeconomic situation, and the complexity of procedures and regulations regarding starting and closing a business, enforcing contracts, protecting investors, getting credit, registering property, and hiring and firing workers. As an example, in Jordan, 11 procedures are needed to start a business, taking 36 days to accomplish. However, the complexity leads to uncertainty, increases transactions costs, and offers opportunities for fraud. As well, bankruptcy receives a lot of attention in reform proposals for improving access to credit in Jordan. The problem is that most of the collateral enforcement takes place outside of bankruptcy.

Another example in enforcing contract is that Jordan needs 43 procedures and takes 342 days and business exit-works in direct negotiations between creditors and debtors. Secured creditors can seize the assets of defaulted companies without the complex court procedures associated with bankruptcy. As a result, they can recover 26.7 cent for every dollar loaned. However, efficient insolvency helps new entrepreneurs start and grow their

businesses. With higher recovery rates, banks are more willing to lend and more money goes to new business ventures.

***The analysis of data rejected the third hypothesis. There are significant differences in the influence of the different scenarios of the generic strategies on the competitive advantage of the SMEs working in processing the natural stone sector in Jordan, Turkey and Italy.***

It is noticed that the "low cost with high differentiation" strategy has the highest influence on the competitive advantage of the SMEs working in processing the natural stone in the three countries. However, due to the limited quantities and unique quality of the Jordanian natural stone, the SMEs working there should focus on offering differentiated products for niche markets rather than focusing on delivering products with low prices.

***The analysis of data rejected the fourth hypothesis. There are significant differences in the impact of the ICT on the competitive elements of the SMEs working in the natural stone sector between Jordan, Turkey and Italy.***

There are significant differences in the impact of the ICT on the competitive elements of the three countries. Jordan has the lowest rank in comparison with Turkey and Italy. The benefits of the ICT- such as e-mail and websites- depend on the size of the SMEs network externalities i.e. the installed base of other firms and consumers who also adopt these technologies. Thus, the appropriate timing of the ICT investments is likely to differ according to the industrial sector and the particular supply chain structures within which a firm is located. As well, the location-specific factors have a potential importance in the technology diffusion.

### **6.1.2. Significance of the Research**

In light of the analysis, there are some areas require more attention for the Jordanian economy. Apart from such general implications as maintaining macroeconomic and political stability, conducting institutional reforms to smooth the functioning of the bureaucracy as well as the financial markets, improve the general transportation and communication infrastructure and promoting long term investment. According to Porter (1990), governments should move beyond macroeconomic policy, avoid over reliance on devaluation and wage rates, and focus on the true sources of competitive advantage instead.

Among things that can be done are increasing investment in specialized human resources, encouraging employee training, forging closer ties with educational institutions and industry, emphasizing more practical orientation, promoting respectable and high quality forms of higher education besides the university, supporting research and development, and encouraging specialization amongst the universities. The SMEs, on the other hand, should take a more proactive role in education and promote industry-specific education and research institutions. They should grant scholarships and research funds for them, increase investment in on-the-job training and put pressure on research institutions so that the research is commercially relevant. Similarly, the associations within an industry should participate in developing specialized skills, technology and infrastructure, provide a clearing house for information, and constitute a bridge between industry and educational institutions.

Building on the entrepreneurial strength of the Jordanian businessmen needs special attention. Promoting new business formation and encouraging and facilitating international involvement of Jordanian SMEs are amongst the most prominent areas that can be improved in this respect. As well, the SMEs should seek challenges, which push them to upgrade. They should, for example, prefer to serve the most of the sophisticated and demanding buyers and urge the domestic suppliers to improve by either setting performance standards or product specifications. Furthermore, the SMEs need to be able to figure out how, when, and where to use the ICT techniques to reap the above gains.

The Jordanian government may also contribute towards the improvement of domestic demand conditions by, for example, introducing better standards, consumers' rights legislation and environmental regulation and confirming commitment to quality. As well the government may encourage and support the development of the natural cluster.

#### 6.1.2.1. Academic Significance of the Research

- √ Applying Porter's diamond, Porter's five forces, the generic strategies, and the impact of the ICT on business environment on three countries located in different economic stages. A study of Jordan (located in the factor-driven stage), Turkey (located in the investment-driven stage), and Italy (located in the innovation-driven stage) present a good opportunity to apply all of that in low, middle and high income countries. Beside, all of the above mentioned models, generic strategies, and the impact of the ICT were applied on the SMEs working in processing the natural stone sector in the three countries.
- √ Porter has constructed his diamond mainly deriving from the case studies of the industries in the selected developed nations. This study consists of different statistical tests such as the ANOVA, and the Kruskal-Wallis test not to testifying the model itself rather than to testifying whether there are significant differences between the three countries.
- √ Applying Porter's diamond, Porter's five forces, value chain, the generic strategies, and impact of the ICT on business environment as a conceptual framework. The study discusses Porter's diamond as a microenvironment context, in addition to Porter's five forces model as an industry structure. These five forces shape the generic strategies of the SMEs taking into considerations the internal value chain of these SMEs.
- √ The statistical test proves that the expectation is not the reason why the SMEs working in processing the natural stone sector in Jordan are not working as companies. Other reasons such as laws and regulations concerning the entrance and exit of the businesses in Jordan might be the reason.

#### 6.1.2.2. Empirical Significance of the Research

- √ The Jordanian government and the SMEs working in processing the natural stone sector are aware of the competitive factors confronting their competitive advantage. This study applies Porter's diamond and five forces framework on these SMEs in order to contribute towards a better understanding of the sources of competitive advantage. Thus, in order to build a sustainable competitive advantage for the SMEs in Jordan, there is a need to improve the sources of competitive advantage.
- √ The Jordanian government and the SMEs working in processing the natural stone sector are aware of the benefits and limitations of using the ICT. The introduction of the ICT changes the nature of competition. Therefore, there is a need to understand its impact in order to maximize its benefits and to reduce its threats.
- √ The Jordanian government is aware of the reasons why the SMEs in Jordan prefer to work individually or in a partnership (not as companies). As a result, the Jordanian government needs to revise the current laws and regulations concerning the entrance and exit of the businesses in order to modify and simplify them.
- √ Building a dynamic clustering for creating competitive advantage for the SMEs working in processing the natural stone in Jordan. Networking allows the SMEs to combine the advantages of smaller scale and greater flexibility with economies of scale and scope in larger markets. The links might take different shapes in which different firms join together to co-produce, co-market, or co-purchase, cooperate in new product development, or share of information. In order to build a dynamic cluster, the researcher proposes the model shown in (figure 5.3). The professional associations, educational-training, technical and financial support organizations and related ministries, lead the board of the proposed cluster. The board is responsible for setting up the strategic directions and evaluating the performance of the cluster. While the management of the cluster is responsible for promoting productivity,

innovation and competition of the participants in a number of ways, e.g., the reduced cost of sharing resources, the critical mass created by having a pool of specialized skills, expertise and value-added products. The cluster will enhance the economic foundations such as a skilled workforce, research and development capacity and infrastructure and create assets from trust, synergy, collaboration and cooperation, which are all essential for competitiveness.

## **6.2. Limitations and Obstacles**

The researcher is aware of a number of limitations and obstacles present in the study. Hence, the conclusions drawn from the study need to be put into perspective such limitations and obstacles:

- ✓ In Jordan, it is likely that no local references can be found related to the competitive advantage of the SMEs working in the natural stone sector.
- ✓ Importing approaches from one country to another can not always be applied elsewhere. This may lead to bias the analysis being based on the competitive advantage theory grown by Porter (five forces, value chain, and the diamond).
- ✓ For the Jordanian firms, the ICT concept may be relatively new and this may cause a bias in the data gathering and consequently in the interpretation and the conclusion.
- ✓ There is a lack of documentation and informality of business in the small sized enterprises in the three countries.
- ✓ The study focuses on one specific sector in three countries. Therefore, there are some limitations in generalizing the conclusions of the study.
- ✓ The difficulties in dealing with the Turkish and Italian SMEs due to the language and cultural differences. Therefore, the researcher read many books and articles before his visits to Turkey and Italy and he asked friends to accompany him in his visits to the firms.
- ✓ The difficulties in determining the accurate number of the SMEs that are working in processing the natural stone in the three countries; different sources provide different information. That is why the researcher was very cautious in selecting the reliable source of information.

### **6.3. Recommendation for Future Research**

Over the course of the research, there were a number of issues that were touched upon and that are of relevance to the topic studied yet entails further elaboration to lie beyond the scope of the paper. It is worthwhile for future research to delve into such issues to gain a different perspective and a more elaborated understanding of the competitiveness of the Jordanian SMEs.

- √ The research has solely tackled the SMEs that are working in processing the natural stone sector in Jordan, Turkey and Italy. Future research needs to cover other sub-sectors within the natural stone industry such as quarries and contracting, and other sectors in the three countries. Other non-Mediterranean countries might be involved as well such as India, and China.
- √ The implementation of the generic strategies by the SMEs has been discussed. Future research needs to provide an elaborated analysis on the operational strategies such as marketing strategies, production strategies, etc...
- √ The research covers the impact of the basic elements of the ICT mainly the B2B and B2C on the competitiveness of the SMEs. Future research may discuss other elements of the e-business such as e-auction, Business to Employees (B2E), Business to Government (B2G), etc....
- √ There is a need for impact assessment to current financial programs. A set of performance indicators need to be in place, irrespective to the source of support, that is aligned with the government's expectations of the role to be played by the SMEs in growth and development. Future research would provide a tool to synchronize the diversity of efforts being exerted rather than being faced with a situation of isolated model in terms of lack of synergy among such programs.
- √ The research shows that the social relationship preferences are not the reason for the SMEs working in processing the natural stone sector to work individually or in a partnership. There is a need to investigate the impact of other reasons such as the laws and regulations concerning the entrance and exit of the businesses.

- √ Based on the significant differences in the results of the survey in Jordan in 2003 and 2006, it would be of interest to conduct the same survey after 3-5 years in Jordan, Turkey and Italy. Conducting this research after 3-5 years will explain the dynamism of the natural stone sector in the three countries especially the impact of the ICT on the sector.
- √ More work is needed to establish the validity and measurement of culture and cultural distance. It would be beneficial to investigate the impact of the different cultures on survey scales and how it could be controlled and corrected these biases.

## APPENDICES

### Appendix A-1

#### Questionnaire (English)

##### *Part I Industry Competitiveness and Macro-environment*

1. Which of the following elements do you consider to be critical threats to your business?

	very Neg.	Neg.	Mod	Pos.	Very Pos.
- Acquiring Capital					
- Acquiring Information					
- Political and economic uncertainties					
- Bureaucratic rules and regulations					
- Infrastructure availability					
- Infrastructure costs					
- Inconsistent raw material quality					
- Technical qualifications					
- The market accessibility					
- Local demand					
- International demand					
- Product image in the international markets					
- Consumer awareness with regard to product quality standards					
-Sophisticated customers visit many manufacturers before purchasing					
- Supplier buyer relationships have depended on the family and personal ties					
- The relationship with local banks					
- The relationship with insurance firms					
- the relationship with research and training centers and universities					
- The relationship with local manufacturers					
- The relationship with public institutes					
- The relationship with governmental institutes					
- The relationship with stone cutting firms in the same region					
- The relationship with firms from other sectors (design/ marketing)					

2. Which of the following industry structure do you consider to be the critical threats to the future of your business (Rank in order 1, area of major threat & 5, not an area of major threat)?

	Area of major threat			Not an area of threat	
	1	2	3	4	5
- The intensity of rivals					
- The power of buyers					
- The power of suppliers					
- The threat of substitutes					
- The threat of entry					

## Part II Firm's Strategy and Performance

3. Which type of generic business strategy is most closely related to your firm's strategy (please only select one type)?

- Your firm is the low cost producer in the sector. The standard products are offered in a broad market area.	
- Your firm offers differentiated products, and they are produced at lowest cost. The products are offered in a broad market area.	
- Your firm is operating in one or a few specific market-niches and offers standard products. Within this market niche, your firm is the low cost producer.	
- Your firm is operating in one or a few market-niches. In these niches many differentiated products are offered and produced at low cost as possible.	
- Your firm is NOT the lowest cost producer in the sector. The standard products are offered in a broad market area.	
- Your firm offers many differentiated products, and you are NOT the low cost producer. The products are offered in a broad market area.	
- Your firm is operating in one or a few specific market-niches and offers standard products. Within this market niche, your firm is NOT the low cost producer.	
- Your firm is operating in one or a few market-niches. In these niches you offer differentiated products, your firm is NOT the low cost producer.	

4. How do you evaluate the following elements at your firm?

	very Neg.	Neg.	Mod.	Pos.	Very Pos.
- Percentage of new products of total turnover					
- Time necessary to develop new generation of products					
- Customer satisfaction					
- Your market share					
- Customer keep on					
- Your employees satisfaction					
- Employees keep on					
- Productivity of your employees					
- Return on Investment					
- Profitability					
- Revenue growth					
- Cost reduction					
- Exportation					

### Part III E-Commerce

5. Do you use a computer? ☐ Yes ☐ No

If yes, for what purpose:

☐ Printing

☐ Accounting

☐ Inventory

☐ Pay roll

☐ Sales

☐ Production

☐ Other: please specify: \_\_\_\_\_

6. Do you use an Internet?

☐ Yes    ☐ No

*If yes, for what purpose:*

- ☐ A tool for communicating
- ☐ A tool of obtaining information
- ☐ A tool for advertising and marketing
- ☐ A tool for buying
- ☐ A tool for selling
- ☐ A tool for conducting banking and financial transactions
- ☐ A tool for improving interaction within the company (processes/ organization)

If no, what is the reason?

- ☐ Low level of technological expertise
- ☐ Uncertainty about benefits
- ☐ The fear of too low use of e-commerce by customers and suppliers
- ☐ Ensuring the security of payments and privacy of personal data
- ☐ Do not know how to cope with the complex rules governing this area.
- ☐ The predominance of English on the World Wide Web
- ☐ The high cost of Internet access is a further impediment
- ☐ Uncertainty about the legal, regulatory and tax environment

7. Using the Internet helps you to (Rank in order 1, most important & 5, least important)?

	Most Important		Less Important		
	1	2	3	4	5
- Reduce transaction costs					
- Improve quality of product/service					
- Reach new suppliers					
- Reach new customers					
- Defend your self against competitors engaging in e-commerce,					
- Work with large firms (local and international)					
- Increase market share					
- Enter new markets					
- Increase the flexibility of your firm					
- Increase your ability to innovate					
- Improve control of your business process organization					
- Increase job creation in your firm					
- Improve the image of your firm					
- Contribute to solving your problem of lack resources and access to technology					

#### Part IV Firm's Profile

8. What is the legal form of your firm?

☐ Sole Proprietorship   ☐ Partnership   ☐ Company

9. What is the type of your firm?

☐ Family   ☐ Non-Family

10. Total number of employees: \_\_\_\_\_

11 .Year of Establishment: \_\_\_\_\_

12. Firm's Location:

☐ City   ☐ Village   ☐ Industrial Zone

## Appendix A-2

### Questionnaire (Arabic)

الجزء الأول: البيئة المحيطة

١. كيف تقيم العوامل التالية والتي تساعد في تطوير الصناعة المحلية؟

إيجابي جدا	إيجابي	مقبول	سلبي	سلبي جدا	
					- سهولة الحصول على رأس المال
					- سهولة الحصول على المعلومات
					- الأوضاع السياسية والاقتصادية
					- القوانين والأنظمة المعمول بها
					- البنية التحتية المتوفرة حاليا
					- كلفة البنية التحتية
					- إمكانية تزويد كميات كبيرة من الحجر بنفس الجودة أو اللون
					- المؤهلات الفنية المتوفرة حاليا
					- سهولة الدخول إلى الأسواق المحلية والعالمية
					- مستوى الطلب المحلي على الحجر والرخام
					- مستوى الطلب العالمي على الحجر والرخام الأردني
					- سمعة الحجر والرخام الأردني في الأسواق العالمية
					- درجة وعي الزبون حول المواصفات الفنية للحجر والرخام
					- الزبون يطلب تحسين وتطوير على المنتجات بشكل مستمر
					- وجود العلاقات الشخصية في البيع والشراء
					- تعاون البنوك المحلية
					- تعاون مؤسسات التأمين المحلية
					- تعاون مراكز البحث والتدريب والاستشارات والجامعات
					- تعاون المصنعين المحليين للمعدات والأدوات
					- تعاون المؤسسات العامة (غرف تجارية/ اتحادات/ بلديات)
					- تعاون المؤسسات الحكومية
					- تعاون مؤسساتك مع مؤسسات من نفس قطاع الحجر والرخام
					- تعاون مؤسساتك مع مؤسسات من قطاعات أخرى مثل (تصميم/ تسويق/ فحص جودة)

2. كيف تقيم العوامل التالية حسب تهديدها لمؤسستك (الرقم ١) يمثل العامل الأكثر أهمية، الرقم (٥) يمثل العام الأقل أهمية)

5	4	3	2	1	
					- شدة المنافسة بين المؤسسات
					- درجة تحكم المشتري (المتعهد/الزبون)
					- درجة تحكم المورد (صاحب الحجر)
					- تهديد دخول سلع بديلة (حجر صناعي)
					- تهديد دخول منافسين جدد لقطاع الحجر والرخام

الجزء الثاني: استراتيجية المؤسسة والميزة التنافسية

٣. أي من الاستراتيجيات التالية هي أقرب لمؤسستك

- مؤسستك هي المنتج ذات التكاليف الأقل في قطاع الحجر والرخام وتقوم بإنتاج منتجات ستاندر (كغيرها من المنتجين) لخدمة فئات متعددة في السوق.	
- مؤسستك هي المنتج ذات التكاليف الأقل في قطاع الحجر والرخام وتقوم بإنتاج منتجات متميزة عن المؤسسات المنافسة لخدمة فئات متعددة في السوق.	
- مؤسستك هي المنتج ذات التكاليف الأقل في قطاع الحجر والرخام وتقوم بإنتاج منتجات ستاندر (كغيرها من المنتجين) لخدمة فئة محددة في السوق.	
- مؤسستك هي المنتج ذات التكاليف الأقل في قطاع الحجر والرخام وتقوم بإنتاج منتجات متميزة عن المؤسسات المنافسة لخدمة فئة محددة في السوق.	
- مؤسستك ليست المنتج ذات التكاليف الأقل في قطاع الحجر والرخام وتقوم بإنتاج منتجات ستاندر (كغيرها من المنتجين) لخدمة فئات متعددة في السوق.	
- مؤسستك ليست المنتج ذات التكاليف الأقل في قطاع الحجر والرخام وتقوم بإنتاج منتجات متميزة عن المؤسسات المنافسة لخدمة فئات متعددة في السوق.	
- مؤسستك ليست المنتج ذات التكاليف الأقل في قطاع الحجر والرخام وتقوم بإنتاج منتجات ستاندر (كغيرها من المنتجين) لخدمة فئة محددة في السوق.	
- مؤسستك ليست المنتج ذات التكاليف الأقل في قطاع الحجر والرخام وتقوم بإنتاج منتجات متميزة عن المؤسسات المنافسة لخدمة فئة محددة في السوق.	

٤. كيف تقيم العناصر التالية في مؤسستك والمتعلقة بتحديد ميزتك التنافسية؟

ايجابي جدا	ايجابي	مقبول	سلبي	سلبي جدا	
					- نسبة إدخال منتجات/ أصناف جديدة من مجمل المنتجات
					- الفترة التي تستغرقها لإدخال منتجات / أصناف جديدة
					- درجة رضى الزبائن
					- حصتك من السوق المحلي
					- درجة الاحتفاظ بالزبائن
					- درجة رضى الموظفين
					- درجة الاحتفاظ بالموظفين
					- مستوى إنتاجية الموظفين
					- مستوى الإيرادات بالنسبة لحجم الاستثمار (بشكل عام)
					- متوسط الربحية (بشكل عام)
					- النمو في الإيرادات (بشكل عام)
					- مستوى تقليل التكاليف في الإنتاج
					- مستوى الكمية التي تصدرها

الجزء الثالث: التجارة الالكترونية

٥. هل تستخدم الكمبيوتر

☐ نعم ☐ لا

إذا كان الجواب نعم فذلك لغرض: (يمكن اختيار أكثر من إجابة)

☐ طباعة

☐ محاسبة

☐ ضبط مخزون

☐ رواتب

☐ مبيعات (إرساليات)

☐ إنتاج

☐ استخدامات أخرى.....

٦. هل تستخدم الإنترنت؟

☐ نعم ☐ لا

إذا كان الجواب نعم، فذلك لغرض: (يمكن اختيار أكثر من إجابة)

☐ كأداة للاتصال بدل الفاكس أو التليفون

☐ كأداة للحصول على المعلومات

☐ كأداة للإعلان والتسويق

☐ كأداة للبيع (حيث يتم بيع المنتجات واستلام ثمنها باستخدام بطاقة الائتمان)

☐ كأداة للشراء (حيث يتم شراء المنتجات ودفع ثمنها باستخدام بطاقة الائتمان)

☐ كأداة لتسوية الأمور البنكية والاتصال بالمؤسسات المالية

☐ كأداة لتحسين التفاعل داخل المؤسسة (تصميم/ ضبط مخزون/ فحص جودة)

☐ أمور أخرى، حدد:

إذا كان الجواب لا، فما هو السبب: (يمكن اختيار أكثر من إجابة)

☐ قلة مستوى الخبراء في المجال

☐ عدم معرفة الفوائد من استخدام الإنترنت والتجارة الإلكترونية

☐ الخوف من قلة استخدام التجارة الإلكترونية من قبل المستهلك و/أو المورد

☐ تأكيد سرية عمليات الدفع و الأمور الشخصية (عدم وجود الثقة بالانترنت)

☐ عدم معرفة كيفية المواكبة بهذا التطور

☐ هيمنة اللغة الإنجليزية في مجال الإنترنت

☐ ارتفاع تكاليف خدمة الإنترنت

☐ عدم المعرفة بالقوانين والأنظمة المتعلقة بالتجارة الإلكترونية

٧. برأيك استخدام الانترنت في أعمال مؤسستك قد يساعد مؤسستك في: (الرقم ١) يمثل العامل الأكثر أهمية،  
الرقم (٥) يمثل العام الأقل أهمية)

5	4	3	2	1	
					- تقليل الكلفة
					- تحسين جودة المنتج/ الخدمة
					- سهولة الوصول لموردين جدد
					- سهولة الوصول لزيائن جدد
					- بناء آداة دفاعية أمام المنافسين الذين يستخدمون الإنترنت في أعمالهم
					- مواكبة المؤسسات الكبيرة التي تستخدم الإنترنت
					- توسيع رقعة السوق
					- فتح أسواق خارجية
					- زيادة مرونة المؤسسة
					- قدرة المؤسسة على الإبداع
					- زيادة ضبط العملية من المورد إلى المؤسسة إلى الزبون
					- خلق فرص عمل في المؤسسة
					- تحسين صورة المؤسسة
					- حل مشكلة المؤسسات الصغيرة من حيث نقص الموارد واستخدام التكنولوجيا والبحث والتطوير

الجزء الرابع: معلومات عامة

٨. ما هي الصبغة القانونية لمؤسستك:

☐ فردية ☐ شركة تضامنية ☐ محدودة المسؤولية

٩. هل المؤسسة: ☐ عائلية ☐ غير عائلية

١٠. عدد الموظفين الإجمالي: \_\_\_\_\_

١١. سنة التأسيس: \_\_\_\_\_

١٢. موقع المنشأة: ☐ مدينة ☐ قرية ☐ منطقة صناعية

## Appendix A-3

### Questionnaire (Italian)

Parte I Competizione industriale e macro-ambientale

1. Quale dei seguenti elementi consideri essere quello chiave per lo sviluppo dei tuoi affari?

	very Neg.	Neg.	Mod.	Pos.	Very Pos.
- Acquisizione capitale					
- Acquisizione informazioni					
- Incertezza politica ed economica					
- Norme e regolamentazione burocratiche					
- Disponibilita' di infrastrutture					
- Costo delle infrastrutture					
- Inconsistenza qualita' di materie prime					
- Qualificazione tecnica					
- Accessibilita' al mercato					
- Domanda Locale					
- Domanda internazionale					
-Immagine del prodotto nel mercato internazionale					
- Coscienza del consumatore riguardo agli standards qualitativi del prodotto					
-Clienti complessi che visitano molte aziende prima dell'acquisto					
-Relazioni tra compratore e fornitore devono dipendere da legami familiari e personali					
- Relazione con banche locali					
- Relazione con compagnie assicurative					
-Relazione con centri e universita' di ricerca e addestramento					
-Relazione con industrie locali manifatturiere					
-Relazione con istituti pubblici					
-Relazione con istituti del governo					
-Relazione con industrie di estrazione nella stessa regione					
-Relazione con aziende di altri settori (design/marketing)					

2. Quale delle seguenti strutture industriali consideri essere critica minaccia nel futuro dei tuoi affari? (considerando 1 come il settore di maggiore minaccia e 5 il settore di minore)

	Area of major threat			Not an area of threat	
	1	2	3	4	5
- Intensita' della concorrenza					
- Potenza dei compratori					
- Potenza dei fornitori					
- Minaccia di rimpiazzati					
- Minaccia della concorrenza					

## Part II Strategia e performance dell'azienda

3. Quale tipo di strategia di conduzione degli affari in generale e' la piu' vicina a quella scelta dalla tua azienda (si prega di scegliere un solo tipo)?

- La tua azienda e' la produttrice a piu' basso costo nel settore., prodotti standard sono offerti in un mercato a largo consumo	
-La tua azienda offre grande varieta' di prodotti, che possono essere venduti al piu' basso costo. I prodotti sono offerti in un mercato a largo consumo.	
-La tua ditta e' operante in uno o pochi specifici settori di mercato ed offer prodotti standard. Entro questa branca la tua ditta e' la produttrice a piu' basso costo.	
-La tua ditta e' operante in uno o pochi settori di mercato. In queste branche molti e diversificati prodotti sono offerti al piu' basso costo possibile.	
-La tua ditta NON e' la produttrice a piu' basso costo del settore. I prodotti standard sono offerti in un mercato a largo consumo.	
-La tua ditta offre molti diversi prodotti, cosicche' possono essere venduti al prezzo piu' alto. I prodotti sono offerti in un mercato a largo consumo.	
-La tua ditta opera in uno o pochi specifici settori di mercato ed offre prodotti standard. Entro questo settore la tua ditta NON e' la produttrice a piu' basso costo.	
- La tua ditta opera in uno o pochi settori di mercato. Entro questi settori offre molti diversi prodotti, ma la tua ditta non e' la produttrice a piu' basso costo.	

4. Come valuti I seguenti elementi per la tua azienda?

	very Neg.	Neg	Mod	Pos.	Very Pos
- Percentuale di nuovi prodotti rispetto al totale di innovazione					
- Tempo necessario a sviluppare una nuova generazione di prodotti					
- Soddisfazione del cliente					
- La tua fetta di mercato					
- Mantenimento del cliente					
- Soddisfazione dei tuoi dipendenti					
- Fedelta' dei dipendenti					
- Produttivita' dei tuoi dipendenti					
- Ritorno sugli investimenti					
- Profitto					
- Crescita del reddito					
- Riduzione costi					
- Esportazione					

### Part III E- Commerce

5. Usi il computer? ☐ Si ☐ No

Se si, per quale motivo:

- ☐ Stampa
- ☐ Ricezione
- ☐ Inventario
- ☐ Amministrazione stipendi
- ☐ Vendita
- ☐ Produzione
- ☐ Altro: prego

specificare: \_\_\_\_\_

6. Usi Internet? ☐ Si ☐ No

*Se si quale per quale motivo:*

- ☐ Mezzo di comunicazione
- ☐ Mezzo per ottenere informazioni
- ☐ Mezzo per pubblicita' e marketing
- ☐ Mezzo d'acquisto
- ☐ Mezzo di vendita
- ☐ Mezzo per amministrare transazioni bancarie e finanziarie
- ☐ Mezzo per migliorare l'interreazione nell'azienda (processi/organizzazione)

Altri motivi: \_\_\_\_\_

Se no, Per quale motivo?:

- ☐ Basso livello di conoscenza tecnologica
- ☐ Incertezza riguardo I benefici
- ☐ Paura di un uso troppo basso di e-commerce da parte di clienti e fornitori
- ☐ Garantire la sicurezza di pagamenti e privacy di dati personali
- ☐ Non so come accordarmi con le complesse regole di governo in questo settore
- ☐ Predominanza dell'inglese nel World Wibe Web
- ☐ Alto costo d'accesso a internet e' un unltieriore impedimento
- ☐ Incerto riguardo il settore legale, normativo e delle tasse

7. L'uso di internet ti aiuta (Nell'ordine, da 1 come piu' importante a 5 come meno importante)?

	Most Important			Less Important	
	1	2	3	4	5
- Riduce i costi delle transazioni					
- Migliora la qualita' prodotto/servizio					
- Raggiunge nuovi fornitori					
- Raggiunge nuovi clienti					
- Ti difende da rivali impegnati nel e-commerce					
- Lavoro con grandi firme (locali ed internazionali)					
- Aumenta la fetta di mercato					
- Entra in nuovi mercati					
- Aumenta la flessibilita' della tua azienda					
- Aumenta la tua abilita' di innovazione					
- Migliora il controllo dell'organizzazione dei tuoi processi d'affari					
- Aumenta la creazione di lavoro nella tua azienda					
- Migliora l'immagine della tua azienda					
- Contribuisce a risolvere il tuo problema di mancanza di risorse e accesso alla tecnologia					

#### Part IV Profilo della Ditta

8. Quale è la configurazione legale della sua ditta?

☐ Proprietà unica      ☐ Partnership    ☐ Società

9. Di che tipo e' la sua ditta?

☐ Familiare    ☐ Non-Familiare

10. Numero complessivo di dipendenti: \_\_\_\_\_

11. Anno di fondazione: \_\_\_\_\_

12. Ubicazione della Ditta:

☐ Città    ☐ Paese    ☐ Zona industriale

## Appendix A-4

### Questionnaire (Turkish)

Bölüm I Sanayi Rekabeti ve Makro çevre

1. Aşağıdakilerden hangisi sizin işinizi kritik olarak etkilemektedir?

	Çok olumsuz	Olumsuz	Orta	Olumlu	Çok olumlu.
- Sermaye temin					
- Bilgi temini					
- Siyasi ve ekonomik belirsizlikler					
- Bürokratik kurallar ve mevzuat					
- Altyapı kullanılabilirliği					
- Altyapı maliyeti					
- Uyumsuz hammadde kalitesi					
- Teknik özellikler					
- Pazar ulaşılabilirliği					
- Yerel talep					
- Uluslararası talep					
-Uluslararası pazarda ürün'ün imajı					
-Tüketicinin üretim kalite standartlarından haberdar olması					
-Bilinçli tüketicilerin sipariş öncesi pek çok üreticiyi ziyaret etmesi					
-Alıcı ve satıcı ilişkilerinin ailevi ve kisisel bağlara dayanması					
-Yerel bankalarla olan ilişkiler					
- Sigorta şirketleriyle olan ilişkiler					
-Araştırma, Eğitim merkezleri ve üniversitelerle olan ilişkiler					
-Yerel üreticilerle olan ilişkiler					
-Halk enstitüleri ile olan ilişkiler					
-Devlet birimleri ile olan ilişkiler					
-Aynı bölgedeki tas-kesme firmaları ile olan ilişkiler					
-Başka sektörden olan firmalarla ilişkiler (tasarım / pazarlama)					

2. Aşağıdaki sanayi yapılarından hangisi sizce işinizin geleceği için kritik bir tehdittir? (Derece sırası 1, Önemli bir tehdit unsuru & 5, Önemli bir tehdit unsuru değil)?

	Önemli bir tehdit unsuru		Önemli bir tehdit unsuru değil		
	1	2	3	4	5
- Rakiplerin etkinliği					
- Alıcıların gücü					
- Satıcıların gücü					
- ikame ürünler.					
- Yeni firmaların pazara girişi					
- Diğerleri, Lütfen belirtiniz:					

## Bölüm II Firmaların stratejisi ve performansı

3. Hangi genel iş stratejisi sizin firmanızın stratejisine yakındır (Lütfen sadece bir tür seçiniz)?

- Firmanız sektördeki ucuz üreticidir. Standart ürünler geniş bir pazar alanında sunulmaktadır.	
- Firmanız değişik ürünler sunmaktadır, ve en düşük fiyatla satabilmektedir. Ürünler geniş bir pazar alanında sunulmaktadır	
- Firmanız bir veya birkaç özel alan üstüne çalışmaktadır, ve standart ürün sunmaktadır. Bu alanlardaki en düşük maliyetli üretimi gerçekleştirmektedir.	
- Firmanız bir veya birkaç özel ürün üstüne çalışmaktadır. Bu alanlarda değişik ürünler mümkün olan en düşük fiyata satılmaktadır.	
- Firmanız sektördeki en düşük maliyetli üretici değildir. Standart ürünler geniş bir Pazar alanında sunulmaktadır.	
- Firmanız pek çok ürün sunmaktadır, ve ürünler nispeten yüksek fiyatla satılabilmektedir. Ürünler geniş bir pazar alanında sunulmaktadır.	
- Firmanız bir veya birkaç alanda çalışmaktadır ve standart ürünler sunmaktadır. Bu alanda pazardaki en düşük maliyetli firma sizinki değildir.	
- Firmanız bir veya birkaç alanda çalışmaktadır ve farklı ürünler sunmaktadır. Bu alanda pazardaki en düşük maliyetli firma sizinki değildir	

4. Aşağıda sıralanan etkenleri nasıl değerlendiriyorsunuz?

	Çok olumsuz	Olumsuz	Orta	Olumlu	Çok olumlu
- Yeni ürünlerin toplam is hacmindeki oranı					
- Yeni nesil ürünlerin geliştirilmesi için gerekli zaman					
- Müşteri memnuniyeti					
- Pazar payınız					
- Muhafaza edilen müşteriler					
- Çalışanların memnuniyeti					
- Muhafaza edilen çalışanlar					
- Çalışanlarınızın verimliliği					
- Yatırım getirisi					
- Karlılık					
- Gelir artışı					
- Maliyet azaltılması					
- İhracat					

### Bölüm III E-Ticaret

5. Bilgisayar kullanıyorsunuzuz? ☐ Evet ☐ Hayır

Eğer cevabınız Evet ise, hangi amaç için:

☐ Çıktı almak

☐ Yazı yazmak

☐ Envanter çizelgesi

☐ Ücret bordrosu

☐ Satış

☐ Üretim

☐ Diğer: Lütfen belirtiniz: \_\_\_\_\_

6. İnternet kullanıyorsunuzuz

☐ Evet ☐ Hayır

Eğer cevabınız Evet ise, hangi amaç için:

☐ Haberleşme yolu olarak

☐ Bilgi temin etmek için

☐ Reklam vermek ve ticaret için

- ☐ Satınalım için
- ☐ Satış için
- ☐ Bankacılık ve finansman muameleleri için
- ☐ Şirket içi etkileşimi geliştirmek için (süreç/ organizasyon)

Diğer amaçlar için: \_\_\_\_\_

Eğer cevabınız Hayır ise, gerekçeniz?

- ☐ Teknolojik deneyimdeki düşük seviye
- ☐ Faydası konusunda belirsizlik
- ☐ Müşterilerce ve ilgililerce çok düşük seviyede kullanılması korkusu
- ☐ Güvenlik ve kişisel bilgilerin korunması
- ☐ Bu alandaki komplike kuralları bilmemek.
- ☐ Yaygın dilin İngilizce olması
- ☐ İnternet erişiminin yüksek maliyeti
- ☐ Kanunlardaki, mevzuattaki ve vergilerdeki belirsizlik

7. İnternet kullanımı size hangisi için yardım eder (Derece sırası 1, çok önemli & 5, az önemli)?

	Çok önemli			Az önemli	
	1	2	3	4	5
- İşlem maliyetinin azaltılması					
- Üretim / servis kalitesini geliştirme					
- Yeni üreticilere erişim					
- Yeni müşterilere erişim					
- e-ticaretteki kişisel rakiplere karşı kendinizi savunmak					
-Büyük firmalarla çalışmak (yerel ve uluslararası)					
- Pazar payını artırmak					
- Yeni pazarlara girmek					
- Firmanın esnekliğini artırmak					
- Firmanın inovasyon gücünü arttırmak					
- İşin kontrolünün artırılması					
- Firmadaki iş imkanlarını arttırmak					
- Firmanın imajını geliştirmek					
- Kaynak yetersizliği ve teknoloji temini problemlerine katkı sağlamak					

#### IV.cü bölüm Firmanın Profili

8. (Firmanızın hukuki şekli nedir?)

☐ Limited şirket ☐ İki veya daha fazla kişinin ortaklığı ☐ Şirket

9.[Firmanızın tipi nedir]

☐ Aile ☐ Aile değil

10. Toplam işçi sayısı: \_\_\_\_\_

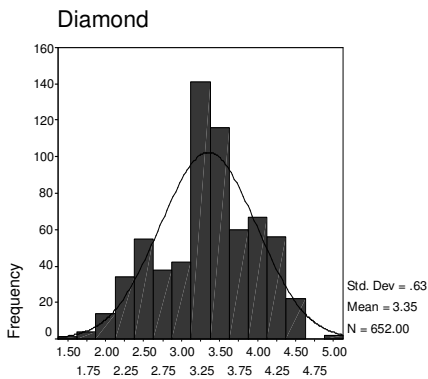
11 . Kuruluş tarihi: \_\_\_\_\_

12. Firmanın bulunduğu yer

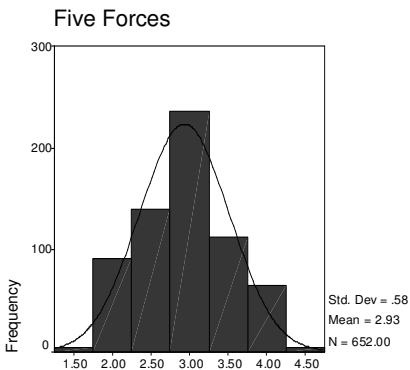
☐ Şehir ☐ Köy ☐ Sanayii Bölgesi

Appendix B-1

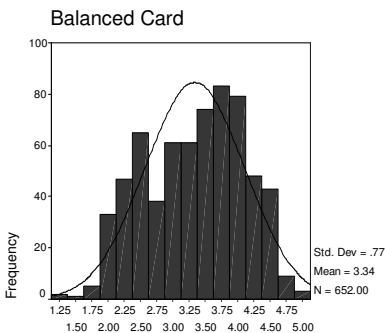
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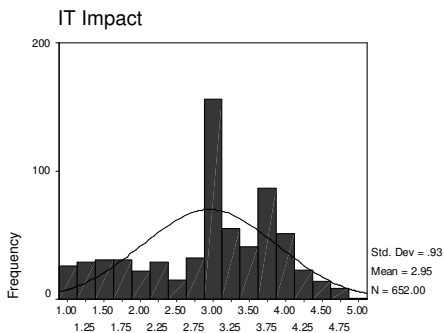
Diamond



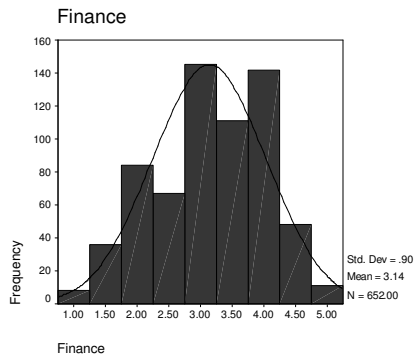
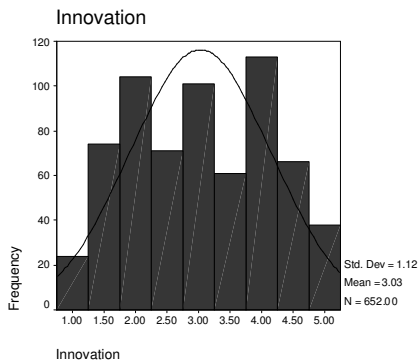
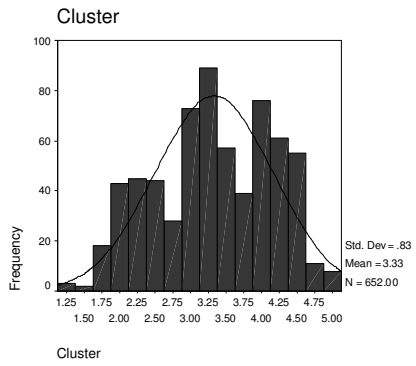
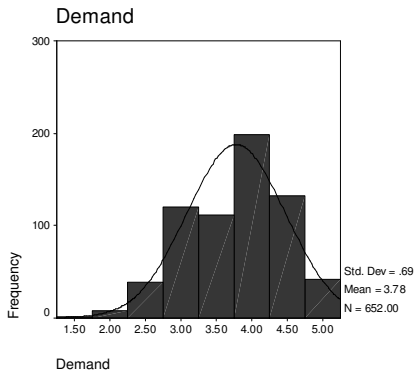
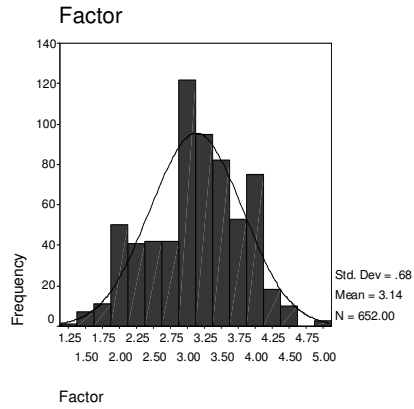
Five Forces

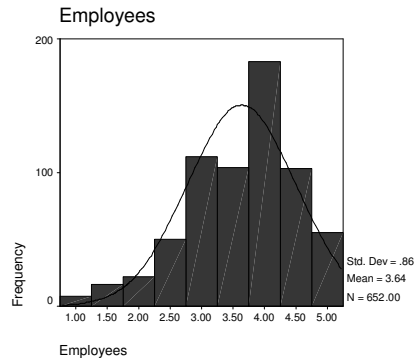
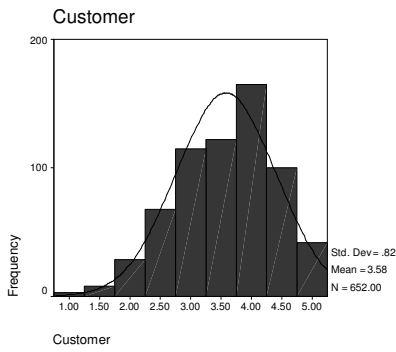


Balanced Card



IT Impact





Note: It is noticed that there is a skewed (to the left or to the right) in the above figures. It means that the distribution is not normal. Therefore, one of the conditions for using the parametric is not achieved. That is why, the non-parametric test were used.

## Appendix B-2

### Testing Homogeneity of Variance

#### Factor Conditions

Item	Levene Statistic	Sig.
Acquiring capital	13.610	.00
Acquiring information	18.703	.00
Political and economic uncertainties	3.849	.02
Bureaucratic rules and regulations	10.907	.00
Infrastructure availability	12.359	.00
Infrastructure cost	3.232	.04
Inconsistent raw material quality	29.589	.00
Technical qualifications	4.322	.01
The market accessibility	25.964	.00

#### Demand Conditions

Item	Levene Statistic	Sig.
Local demand	21.525	.00
International demand	5.612	.00
Product image in the international markets	14.723	.00
Customer awareness with regard to product quality standards	14.362	.00
Sophisticated customers visit many manufacturers before purchasing	3.529	.03
Df1 = 2, DF2 = 649 (652-2-1)		

#### Related and Supporting Industries

Item	Levene Statistic	Sig.
Supplier buyer relationships have depended on the family and personal ties	29.821	.00
The relationship with local banks	9.895	.00
The relationship with insurance firms	25.411	.00
The relationship with research and training centers and universities	10.628	.00
The relationship with local manufacturers	11.341	.00
The relationship with public institutes	2.737	.06
The relationship with governmental institutes	11.090	.00
The relationship with stone cutting firms in the same region	12.713	.00
The relationship with firms from other sectors (design/marketing)	9.524	.00
Df1 = 2, DF2 = 649 (652-2-1)		

### Five Forces

Item	Levene Statistic	Sig.
The intensity of rivals	16.772	.00
The power of buyers	3.400	.03
The power of suppliers	1.180	.30
The threat of substitutes	45.097	.00
The threat of new entry	12.957	.00
Df1 = 2, DF2 = 649 (652-2-1)		

### Balanced Scored Card

Item	Levene Statistic	Sig.
Percentage of new products of total turnover	.479	.61
Time necessary to develop new generation of products	15.540	.00
Customer satisfaction	2.830	.06
Your market share	.152	.85
Customer keep on	.975	.37
Your employees satisfaction	23.580	.00
Employees keep on	25.896	.00
Productivity of your employees	12.285	.00
Return on Investment	.791	.45
Profitability	1.016	.36
Revenue growth	6.311	.00
Cost reduction	.729	.48
Exportation	.336	.71
Df1 = 2, DF2 = 649 (652		

## Competitive Elements

Item	Levene Statistic	Sig.
Reduce transaction costs	5.911	.00
Improve quality of product/service	8.732	.00
Reach new suppliers	2.557	.07
Reach new customers	5.139	.00
Defend your self against competitors engaging in e-commerce	10.116	.00
Work with large firms (local and international)	12.145	.00
Increase market share	8.323	.00
Enter new markets	4.665	.01
Increase the flexibility of your firm	13.333	.00
Increase your ability to innovate	5.920	.00
Improve control of your business process organization	18.172	.00
Increase job creation in your firm	11.842	.00
Improve the image of your firm	8.185	.00
Contribute to solving your problem of lack resources and access to technology	9.683	.00
Df1 = 2, DF2 = 649 (652)		

## Totals

Item	Levene Statistic	Sig.
Diamond	61.751	.00
Five Forces	.887	.41
Balanced Score Card	2.140	.11
IT Impact	4.017	.01
Factor Conditions	1.703	.18
Demand Conditions	.993	.37
Related and supporting Industries	41.740	.00
Innovation	7.908	.00
Customer Satisfaction	.920	.39
Internal Business	12.239	.00
Financial measures	7hg.913	.00
Df1 = 2, DF2 = 649		

Note: The significant differences between the three groups indicate that there are no equal variances as a pre-requisite to use the parametric tests. Therefore, the non-parametric tests were used.

### Appendix B-3

#### Confirmatory Factor Analysis

##### Factor Conditions

Element	Factor
Acquiring capital	.80
Acquiring information	.73
Political and economic uncertainties	.69
Bureaucratic rules and regulations	.70
Infrastructure availability	.63
Infrastructure costs	.69
Inconsistent raw material quality	.71
Technical qualifications	.66
The market accessibility	.60

##### Demand Conditions

Element	Factor
Local demand	.50
International demand	.66
Product image in the international markets	.52
Customer awareness with regard to product quality standards	.54
Sophisticated customers visit many manufacturers before purchasing	.64

##### Related and Supporting Industries

Element	Factor
Supplier buyer relationships have depended on the family and personal ties	.76
The relationship with local banks	.64
The relationship with insurance firms	.69
The relationship with research and training centers and universities	.58
The relationship with local manufacturers	.71
The relationship with public institutes	.59
The relationship with governmental institutes	.67
The relationship with stone cutting firms in the same region	.67
The relationship with firms from other sectors (design/ marketing)	.55

##### Five Forces

Element	Factor
The intensity of rivals	.65
The power of buyers	.70
The power of suppliers	.70
The threat of substitutes	.72
The threat of new entry	.58

**Balanced Scored Card**

<b>Element</b>	<b>Factor</b>
Percentage of new products of total turnover	.78
Time necessary to develop new generation of products	.78
Customer satisfaction	.74
Your market share	.76
Customer keep on	.80
Your employees satisfaction	.83
Employees keep on	.82
Productivity of your employees	.80
Return on Investment	.82
Profitability	.83
Revenue growth	.72
Cost reduction	.75
Exportation	.76

**The ICT and Competitive Element**

<b>Element</b>	<b>Factor</b>
Improve quality of product/service	.74
Reach new suppliers	.73
Reach new customers	.80
Defend your self against competitors engaging in e-commerce	.80
Work with large firms (local and international)	.73
Increase market share	.82
Enter new markets	.84
Increase the flexibility of your firm	.80
Increase your ability to innovate	.80
Improve control of your business process organization	.77
Increase job creation in your firm	.74
Improve the image of your firm	.74
Contribute to solving your problem of lack resources and access to technology	.68

Note: The above table shows that the confirmatory factors are more than 0.5. It means that there is an internal consistency of each construct. This result supports the result of the Cronbach Alpha (discussed in chapter three).

## **Appendix B-4**

### **The Profile of the Ten Jordanian SMEs**

#### Firm One

The firm was established in 1978 as a family business in Amman. It covers a good share of the local market. It exports, irregularly, to the US, Britain, and the Gulf States. The firm's main product is the antique which is highly demanded in the US and Europe. The firm introduced the Internet in 2000.

#### Firm Two

The firm was established in 1996 as a family business in Amman. It covers a good share of the local market. It exports, irregularly, to the US, and Britain. The firm has its own extraction and its main product is the yellow stone which is highly demanded in the US and Europe. The firm introduced the Internet in 1999.

#### Firm Three

The firm was established in 1973 as a family business in Amman. It exports, on a regular basis, to the US, Britain, Italy, Portugal, Saudi Arabia, and the Gulf States. The firm introduced the Internet in 1999.

#### Firm Four

The firm was established in 1997 as a family business in Amman. It exports to the US, Britain, and the Gulf States. The firm's main product is the antique which is highly demanded in the US and Europe. The firm introduces the Internet in 2000.

#### Firm Five

The firm was established in 1996 as a partnership-owned in Amman. It covers a good share of the local market and export, on a regular basis, to the US, Israel and the Gulf States. The firm has its own extraction and its main product is the shinny- rigid stone which is highly demanded in the US and Europe. The firm introduced the Internet in 2001. The owner of the firm shows that the sales have been increased by 20-40% as a result of the Internet by selling to overseas customers. .

#### Firm Six

The firm was established in 1980 as a family business in Amman. It covers a good share of the local market. The firm has its own extraction and its main product is the creamy pinky stone which is highly demanded in the US and Europe. The firm started to expand its exports as a result of e-commerce (1998).

#### Firm Seven

The firm was established in 1999 as a family business in Amman. It covers a good share of the local market. The firm does not conduct its own extraction. Its main product is the antiquated stone which is highly demanded in the US and Europe. The firm started to expand its exports as a result of e-commerce (2001).

#### Firm Eight

The firm was established in 1998 as a partnership business in Karak. The firm has some shares in one of the local extractions in Karak. Its main products are the cream pink and antiquated stones which are in high demand in the US and Europe. The firm introduced the Internet in 1998.

#### Firm Nine

The firm was established in 1987 as a family business in Amman. The firm has its own extraction and its main product is the yellow stone, which is in high demand in Korea and Asian Countries. The firm started to expand its exports as a result of e-commerce (1998).

#### Firm Ten

The firm was established in 1983 as a family business in Amman. In 2000 it became of a private shared company. The firm has its own extraction and its main market is Israel and Iraq. The Internet has been introduced in 2000.

## **Appendix B-5**

### **Semi-Structured Interview Protocol - SMEs**

#### **I. Purpose**

This protocol is used as a guidance of conducting semi-structured interview. It defines procedures and general rules that have to be followed by the researcher.

#### **II. Key Features of the interview**

- 1.The factors of competitive advantage of an SME
- 2.The macro-environment and industry structure of an SME working in the natural stone sector
- 3.Strategies that are capitalizing on the Internet
- 4.The explosion of the ICT, in particular, the Internet.

#### **III. Organization of the Protocol**

This study is organized in three sections:

1. Section one focuses on the factors of competitive advantage of an SME
2. Section two focuses on the challenges of e-commerce for an SME
3. Section three focuses on how the ICT transforms strategy, its impact on the value chain and five forces

#### **IV. Procedures**

##### **A. The schedule of field visits**

- Review of preliminary information of the firm
- Verification of access to the company data and executives
- Special documents needed associated with information technology, and competitive advantage (sources of information)

##### **B. Interviews, direct observations and other sources of information**

- Access to the owner(s) of the company (interview)

- Access to managers and related persons involved in information technology and strategy formulation
- Access to company documents, and archival records

C. Field participant observations on the job place, industrial processes, and production facilities

## V. Questions

A. Definition of factors of competitive advantage of an SME

Topics:

1. The emerging global economy poses both challenges and opportunities for SMEs in developing countries.
2. Find out the macro-environment, industry structure, strategies and factors of competitive advantage of an SME

B. The challenges of the ICT for an SME

## VI. Analysis Plan and Reports

A. Summary report

B. Descriptive information

C. Explanatory information

## **Appendix B-6**

### **Semi-Structured Interview – Institutes**

The following questions have been asked during the semi-structured interview:

- ✓ Definition of the SMEs working in processing the natural stone sector
- ✓ What are the elements of the competitive advantage
- ✓ Evaluate the competitiveness of the SMEs that work in processing the natural stone sector
- ✓ What is the global trend of the natural stone sector
- ✓ Give us your feedback on the analysis of data (if it was available before the interview)
- ✓ When, why and to what extent has choosing one of the generic strategy been associated with higher levels of competitiveness
- ✓ Do you have any available statistics or relevant studies (please provide us)
- ✓ What is the impact of the ICT on the competitive elements of your firm and industry level

## Appendix C

### General Information (Jordan, Turkey and Italy)

Jordan is strategically positioned at the convergence of Europe, Asia and Africa. It came under the control of the Sumerian, Mesopotamian, and other empires such as the Greek, Roman, Persian, and Ottoman. What was in 1920 called Trans-Jordan became the Hashemite Kingdom of Jordan after the British Mandate ended in 1946 (Oxford Business Group 2003). Table (1) summarizes general information concerning area, population, main cities, language, currency, border countries and life expectancy at birth.

**Table 1. General Information – Jordan (2004)**

Area	89,342 sq km
Population; Pop. Growth	5.4 million; 2.5% (70% is below age 30)
Capital	Amman
Main Cities	Zarqa, Aqaba, Irbid, Salt, Karak and Mafrq
Official Language	Arabic, although English is widely spoken in business
Currency	The Jordanian Dinar (JD), equivalent to US \$ 1.41
Border Countries	Iraq, Israel, Saudi Arabia, Syria, and West Bank (PNA)
Life expectancy at birth	Male: 70.96 years; female: 74.84 years

*Source:* CIA 2005; JMOP 2005

Jordan is the world's fifth leading world producer of phosphate rock and the sixth leading producer of potash. It also produces such industrial minerals as bromine, feldspar, gypsum, kaolin, salt and silical sand and such building materials as cement, dimension stone, limestone, and marble. Natural gas and petroleum products are producing for domestic consumption. Additionally, iron, sulfur, and titanium are found in Jordan.

In recent years, Canadian, Japanese, American, Austrian and South Korean companies have explored for oil in Jordan, and according to Jordan's Natural Resources Authority, the country's resources still remain relatively unused. In 1987, natural gas was discovered in Jordan, and experts have estimated that Jordan holds between 150-400 billion cubic feet of natural gas (Oxford Business Group 2003). The five wells currently operating have an annual capacity of over 5.5 billion cubic feet. Natural gas turbines currently power a portion of Jordan's electrical needs, and gas could eventually be used to generate

all of the country's electrical power, in the process replacing up to 40% of fuel imports (Oxford Business Group 2003).

In the 13<sup>th</sup> century, the Ottoman Empire became the dominant power in Asia Minor (now the Asian part of Turkey). Later, the Ottoman Empire expanded to include an area from Morocco to Persia and westwards into Balkans. From the 17<sup>th</sup> century, however, the Empire began to decline. Turkey was created in 1923 from the about to collapse Ottoman Empire. After that, the country instituted material laws to replace traditional religious faith. In 1945 Turkey joined the UN, and then in 1952 it became a member of the NATO. Table (2) summarizes the general information concerning area, population, etc.

**Table 2. General Information – Turkey (2003)**

Area	814,548 sq km (790,200 in Asia, 24,378 in Europe)
Population	68 million
Capital	Ankara
Main Cities	Adana, Antalya, Istanbul, Izmir, Karabuk, Karaman
Official Language	Turkish (official), Kurdish, Arabic, Armenian, Greek
Currency	Turkish liras per US dollar - 1,500,900
Border Countries	Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Iran, Iraq, Syria.
Life expectancy at birth	Male: 69.15 years; female: 74.01 years

*Source:* CIA 2004

Since 1815, a strong movement grew in Italy asking for unification and freedom and be free from the Austrian control. Italy became a nation-state in 1861 and established its parliamentary government in the early 1920s when Bento Mussolini established a fascist dictatorship (Porter 1998). Mussolini’s alliance with Germany led to Italy's defeat in World War II. A democratic republic replaced the monarchy in 1946 and an economic recovery followed (CIA 2002). Changes of administrations were frequent. From 1947 to the early 1990s, Italy had no less than 57 governments. Since 1992, a new era for the Italian policies opened the way for a radical modernization of the country’s economic and social structure. Table (3) summarizes general information concerning the area, population, etc.

**Table 3. General Information – Italy (2004)**

Area	301,230 sq km
Population	58 million
Capital	Rome
Main Cities	Milan, Bologna, Turín, Palermo, Venice, Florence, Naples
Official Language	Italian, and small German, French, and Slovene speaking
Currency	Euro (EUR), euros per US dollar: 1.1324
Border Countries	Austria, France, Vatican, San Marino, Switzerland
Life expectancy at birth	Male: 76.08 years; female: 82.63 years

*Source:* CIA 2005

## Appendix D-1

### Mean Rank

(Jordan, Turkey, and Italy)

#### Factor Conditions – Mean Rank

No	Element	Country +	Mean Rank
1	Acquiring capital	Jordan Italy Turkey	143.40 417.16 319.59
2	Acquiring information	Jordan Italy Turkey	132.84 443.94 288.92
3	Political and economic uncertainties	Jordan Italy Turkey	346.96 337.35 297.82
4	Bureaucratic rules and regulations	Jordan Italy Turkey	175.71 431.151 278.20
5	Infrastructure availability	Jordan Italy Turkey	206.14 456.33 223.36
6	Infrastructure costs	Jordan Italy Turkey	215.37 420.77 267.21
7	Inconsistent raw material quality	Jordan Italy Turkey	141.80 359.70 401.30
8	Technical qualifications	Jordan Italy Turkey	110.43 414.22 345.38
9	The market accessibility	Jordan Italy Turkey	281.38 384.61 274.58

+ Number of respondents (Jordan = 140, Italy = 299, and Turkey = 213)

**Demand Conditions – Mean Rank**

<b>No</b>	<b>Element</b>	<b>Country+</b>	<b>Mean Rank</b>
1	Local demand	Jordan Italy Turkey	267.39 417.98 236.94
2	International demand	Jordan Italy Turkey	87.12 382.21 405.64
3	Product image in the international markets	Jordan Italy Turkey	251.68 388.79 288.24
4	Customer awareness with regard to product quality standards	Jordan Italy Turkey	223.46 377.71 322.34
5	Sophisticated customers visit many manufacturers before purchasing	Jordan Italy Turkey	228.02 342.11 369.32

+ Number of respondents (Jordan = 140, Italy = 299, and Turkey = 213)

**Five Competitive Forces – Mean Rank**

<b>No</b>	<b>Element</b>	<b>Country</b>	<b>Mean Rank</b>
1	The intensity of rivals	Jordan Italy Turkey	180.83 386.28 338.34
2	The power of buyers	Jordan Italy Turkey	180.52 347.33 393.21
3	The power of suppliers	Jordan Italy Turkey	170.82 359.23 382.88
4	The threat of substitutes	Jordan Italy Turkey	438.43 256.41 351.32
5	The threat of new entry	Jordan Italy Turkey	302.92 346.61 313.77

+ Number of respondents (Jordan = 140, Italy = 299, and Turkey = 213)

### Related and Supporting Industries – Mean Rank

No	Element	Country+	Mean Rank
1	Supplier buyer relationships have depended on the family and personal ties	Jordan Italy Turkey	327.53 310.14 348.79
2	The relationship with local banks	Jordan Italy Turkey	90.38 357.85 437.69
3	The relationship with insurance firms	Jordan Italy Turkey	132.76 403.78 345.36
4	The relationship with research and training centers and universities	Jordan Italy Turkey	99.17 417.88 347.64
5	The relationship with local manufacturers	Jordan Italy Turkey	152.35 386.33 356.97
6	The relationship with public institutes	Jordan Italy Turkey	185.78 390.74 328.81
7	The relationship with governmental institutes	Jordan Italy Turkey	211.33 435.30 249.48
8	The relationship with stone cutting firms in the same region	Jordan Italy Turkey	220.59 428.01 253.62
9	The relationship with firms from other sectors (design/ marketing)	Jordan Italy Turkey	110.19 410.67 350.53

+ Number of respondents (Jordan = 140, Italy = 299, and Turkey = 213)

### Balanced Scored Card – Mean Rank

No	Element	Country +	Mean Rank
1	Percentage of new products of total turnover	Jordan Italy Turkey	226.80 399.59 289.43
2	Time necessary to develop new generation of products	Jordan Italy Turkey	222.71 412.53 273.95
3	Customer satisfaction	Jordan Italy Turkey	218.94 362.22 347.05
4	Your market share	Jordan Italy Turkey	217.26 365.41 343.69
5	Customer keep on	Jordan Italy Turkey	227.80 361.14 342.75
6	Your employees satisfaction	Jordan Italy Turkey	275.48 333.10 350.77
7	Employees keep on	Jordan Italy Turkey	286.21 333.93 342.55
8	Productivity of your employees	Jordan Italy Turkey	259.46 337.90 354.56
9	Return on Investment	Jordan Italy Turkey	213.72 372.84 335.58
10	Profitability	Jordan Italy Turkey	167.77 397.22 331.55
11	Revenue growth	Jordan Italy Turkey	186.94 401.17 313.41
12	Cost reduction	Jordan Italy Turkey	283.95 337.62 338.86
13	Exportation	Jordan Italy Turkey	174.22 396.65 328.11

+ Number of respondents (Jordan = 140, Italy = 299, and Turkey = 213)

### Computer Usage – Mean Rank

No	Area	Country +	Mean Rank
1	Printing	Jordan	292.29
		Italy	294.41
		Turkey	297.50
2	Accounting	Jordan	229.39
		Italy	307.70
		Turkey	314.90
3	Inventory Control	Jordan	219.92
		Italy	326.92
		Turkey	291.60
4	Payroll	Jordan	224.14
		Italy	354.19
		Turkey	248.05
5	Sales	Jordan	256.36
		Italy	342.55
		Turkey	246.40
6	Production	Jordan	236.24
		Italy	332.30
		Turkey	273.80

+ Number of respondents (Jordan = 113, Italy = 286, and Turkey = 190)

### Commercial Usage of the Internet – Mean Rank

No	Area	Country +	Mean Rank
1	Communicating	Jordan	226.57
		Italy	245.52
		Turkey	246.50
2	Information	Jordan	240.65
		Italy	242.52
		Turkey	243.50
3	Advertising	Jordan	206.27
		Italy	251.77
		Turkey	247.68
4	Buying	Jordan	261.42
		Italy	240.48
		Turkey	235.16
5	Selling	Jordan	218.05
		Italy	265.20
		Turkey	218.98
6	Banking	Jordan	222.78
		Italy	249.77
		Turkey	241.67
7	Interaction	Jordan	224.93
		Italy	250.86
		Turkey	238.66

+ Number of respondents (Jordan = 85, Italy = 248, and Turkey = 151)

### Reasons of Not Using the Internet – Mean Rank

No	Reasons	Country +	Mean Rank
1	Level of Expertise	Jordan	74.72
		Italy	88.85
		Turkey	89.60
2	Benefits Uncertainty	Jordan	100.43
		Italy	71.56
		Turkey	81.02
3	Low Use of E-Commerce	Jordan	94.09
		Italy	70.88
		Turkey	87.19
4	Security of Payment	Jordan	100.59
		Italy	74.09
		Turkey	78.79
5	Complex Rules	Jordan	107.51
		Italy	65.82
		Turkey	79.45
6	Predominance of English	Jordan	81.82
		Italy	77.18
		Turkey	92.90
7	High Cost	Jordan	98.35
		Italy	67.47
		Turkey	86.23
8	Legal, Regulatory and Tax Environment	Jordan	94.62
		Italy	58.35
		Turkey	97.03

+ Number of respondents (Jordan = 55, Italy = 51, and Turkey = 62)

### The ICT and Competitive Element– Mean Rank

No	Variable	Country +	Mean Rank
1	Reduce transaction costs	Jordan Italy Turkey	226.01 391.95 300.66
2	Improve quality of product/service	Jordan Italy Turkey	235.11 399.36 284.29
3	Reach new suppliers	Jordan Italy Turkey	198.87 394.24 315.29
4	Reach new customers	Jordan Italy Turkey	190.40 402.87 308.76
5	Defend your self against competitors engaging in e-commerce	Jordan Italy Turkey	257.15 350.32 338.64
6	Work with large firms (local and international)	Jordan Italy Turkey	266.88 332.73 356.94
7	Increase market share	Jordan Italy Turkey	219.01 353.16 359.72
8	Enter new markets	Jordan Italy Turkey	207.84 366.88 347.81
9	Increase the flexibility of your firm	Jordan Italy Turkey	265.55 345.76 339.52
10	Increase your ability to innovate	Jordan Italy Turkey	240.04 362.10 333.35
11	Improve control of your business process organization	Jordan Italy Turkey	277.36 351.59 323.58
12	Increase job creation in your firm	Jordan Italy Turkey	275.00 354.18 321.50
13	Improve the image of your firm	Jordan Italy Turkey	214.66 370.36 338.45
14	Contribute to solving your problem of lack resources and access to technology	Jordan Italy Turkey	268.31 340.13 345.61

+ Number of respondents (Jordan = 85, Italy = 248, and Turkey = 151)

## Appendix D-2

### Mann-Whitney Test

(Jordan, and Turkey)

#### Factor Conditions

Element	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Acquiring Capital	6310.0	-9.536	.00*
Acquiring Information	6287.5	-9.591	.00*
Political and economic uncertainties	12697.0	-2.441	.01*
Bureaucratic rules and regulations	9870.0	-5.621	.00*
Infrastructure availability	14218.0	-.790	.43
Infrastructure costs	12363.5	-2.947	.00*
Inconsistent raw material quality	2963.0	-13.075	.00*
Technical qualifications	2606.5	-13.488	.00*
The market accessibility	14364.0	-.614	.53

\* Significant (values are less than or equal 0.05)

#### Demand Conditions

Element	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Local demand	13052.5	-2.0	.03*
International demand	1083.0	-15.16	.00*
Product image in the international markets	13492.0	-1.59	.11
Consumer awareness with regard to product quality standards	10629.0	-4.8	.00*
Sophisticated customers visit many manufacturers before purchasing	8679.0	-6.97	.00*

\* Significant (values are less than or equal 0.05)

#### Five Forces

Element	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Intensity of rivals	6947.5	-8.884	.00*
Power of buyers	5399.0	-10.508	.00*
Power of suppliers	5401.5	-10.473	.00*
Threat of substitutes	11691.5	-3.564	.00*
Threat of entry	14310.00	-.665	.50

\* Significant (values are less than or equal 0.05)

### Related and Supporting Industries

Element	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Supplier buyer relationships have depended on the family and personal ties	13705	-1.33	.18
Relationship with local banks	607.5	-15.632	.00*
The relationship with insurance firms	4198	-11.86	.00*
Relationship with research and training centers and universities	2057	-14.12	.00*
Relationship with local manufacturers	5620.5	-10.18	.00*
Relationship with public institutes	7871	-7.816	.00*
Relationship with governmental institutes	13151	-1.9	.04*
Relationship with stone cutting firms in the same region	12617	-2.5	.01*
Relationship with firms from other sectors (design/ marketing)	2332	-13.7	.00*

\* Significant (values are less than or equal 0.05)

### Balanced Scored Card

Variable	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Percentage of new products of total turnover	11900.5	-3.372	.00*
Time necessary to develop new generation of products	12880.0	-2.246	.02*
Customer satisfaction	9132.0	-6.491	.00*
Market share	9037.0	-6.574	.00*
Customer keep on	9501.5	-6.141	.00*
Employees satisfaction	11204.0	-4.284	.00*
Employees keep on	12133.5	-3.237	.00*
Productivity of your employees	10359.0	-5.164	.00*
Return on Investment	9296.0	-6.231	.00*
Profitability	7075.0	-8.698	.00*
Revenue growth	8345	-7.33	.00*
Cost reduction	12426	-2.75	.00*
Exportation	7458	-8.18	.00*

\* Significant (values are less than or equal 0.05)

### The ICT and Competitive Elements

Variable	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Reduce transaction costs	11221	-4.25	.00*
Improve quality of product/service	12875	-2.28	.02*
Reach new suppliers	9395	-6.17	.00*
Reach new customers	9309	-6.22	.00*
Defend your self against competitors engaging in e-commerce	11387	-3.97	.00*
Work with large firms (local and international)	10891	-4.52	.00*
Increase market share	8824.0	-6.750	.00*
Enter new markets	8765.0	-6.805	.00*
Increase the flexibility of your firm	11801.0	-3.521	.00*
Increase ability to innovate	10739.0	-4.689	.00*
Improve control of business process organization	13000	-2.19	.02*
Increase job creation in your firm	13033	-2.16	.03*
Improve the image of your firm	9325.5	-6.23	.00*
Contribute to solving your problem of lack resources and access to technology	11460.5	-3.92	.00*

\* Significant (values are less than or equal 0.05)

### The ICT Usage, Benefits and Obstacles

Element	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Printing	10545.0	-1.837	.06
Accounting	7618.0	-7.541	.00*
Inventory control	8122.0	-4.183	.00*
Payroll	9863.5	-1.395	.16
Sales	10372.0	-.590	.55
Production	9366.0	-3.071	.00*
Communications	5889.0	-3.572	.00*
Information	6342.0	-1.333	.18
Advertisement	5319.5	-2.604	.00*
Sales	6393.0	-.072	.94
Buying	5721.0	-1.610	.10
Financial transactions	5916.5	-1.636	.10
Interaction	6053.5	-1.291	.19
Expertise	1403.0	-2.23	.02*
Benefit uncertainty	1311.0	-2.484	.01*
Use of Internet	1565.0	-.949	.34
Security	1262.5	-2.836	.00*
Complex rules governing this area	1135.5	-3.591	.00*
Predominance of English	1480.0	-1.458	.14
Cost	1459.0	-1.552	.12
Legal, regulatory and tax environment	1656.0	-.362	.71
Reduce transaction costs	11221.0	-4.251	.00*
Improve quality of product/service	12875.0	-2.281	.02*
Reach new suppliers	9395.0	-6.178	.00*
Reach new customers	9309.0	-6.222	.00*
Defend your self against competitors engaging in e-commerce,	11387.0	-3.970	.00*
Work with large firms (local and international)	10891.5	-4.524	.00*

\* Significant (values are less than or equal 0.05)

## **Appendix D-3**

### **Mann-Whitney Test**

#### **(Jordan 2003 and Jordan 2006)**

In the first survey ,conducted in 2003, only 62 questionnaires were returned back while in the second survey ,was conducted in 2006, 140 questionnaires were received. In order to measure the dynamism of the sector, the same questions have been used in the two surveys. Mainly, there are two reasons for the significant increase in the number of the received questionnaires in the second survey:

- √ The hesitation of filling the questionnaire by the owners/ managers of the SMEs has been reduced; they faced no problem with the tax agencies by providing the data in the first time. As well, they became familiar with the questionnaire.
- √ The researcher became more professional in conducting the field research.

In order to test the significant differences between the different items in the two surveys and because not all of the conditions for using the parametric test are met, the Mann-Whitney Test is used.

#### **Factor Conditions**

The table below shows that there are significant differences in some of the factor conditions, in acquiring information, bureaucratic rules and regulations, infrastructure cost, inconsistent raw material, technical qualifications, and market accessibility. The mean rank explains if the significant difference is positive or negative; in case there is an increase in the mean rank means that there is an improvement in that element and vice versa.

### Factor Conditions – Mann-Whitney Test

	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Acquiring capital	3847.0	-1.367	.17
Acquiring information	3210.0	-3.102	.00*
Political and economic uncertainties	3690.0	-1.772	.07
Bureaucratic rules and regulations	2461.5	-5.206	.00*
Infrastructure availability	3944.0	-1.10	.27
Infrastructure costs	3363.0	-2.721	.00*
Inconsistent raw material quality	2612.5	-4.8	.00*
Technical qualifications	1756.5	-7.07	.00*
The market accessibility	1682.0	-7.29	.00*

\* Significant (values are less than or equal 0.05)

An unexpected result was found. The data shows that there is an improvement on the market accessibility of the Jordanian products, and this is due to the openness of the economy (signing different international trade agreements). While, there are significant deterioration on technical qualifications, infrastructure cost, consistency of raw material, bureaucratic rules and regulations, and acquiring information.

### Factor Conditions – Mean Rank

No	Element	Country +	Mean Rank
1	Acquiring capital	Jordan 2003 Jordan 2006	109.45 97.98
2	Acquiring information	Jordan 2003 Jordan 2006	119.73 93.43
3	Political and economic uncertainties	Jordan 2003 Jordan 2006	91.02 106.14
4	Bureaucratic rules and regulations	Jordan 2003 Jordan 2006	131.80 88.08
5	Infrastructure availability	Jordan 2003 Jordan 2006	107.89 98.67
6	Infrastructure costs	Jordan 2003 Jordan 2006	117.26 94.52
7	Inconsistent raw material quality	Jordan 2003 Jordan 2006	129.36 89.16
8	Technical qualifications	Jordan 2003 Jordan 2006	143.17 83.05
9	The market accessibility	Jordan 2003 Jordan 2006	58.63 120.49

+ Number of respondents (Jordan 2003 = 62, Jordan 2006 = 140)

As a conclusion, there is a decline in most of the factor conditions. This result does not clarify the significant increase in the exported quantity of the Jordanian natural stone.

### **Demand Conditions**

The data (table below) shows that there are significant differences in the local and international demand, product image, and customer awareness.

#### **Demand Conditions – Mann-Whitney Test**

	<b>Mann-Whitney U</b>	<b>Z</b>	<b>Asymp. Sig (2-tailed)</b>
Local demand	2489	-5.1	.00*
International demand	1455	-7,9	.00*
Product image in the international markets	3448.5	-2.48	.01*
Customer awareness with regard to product quality standards	3377.5	-2.6	.00*
Sophisticated customers visit many manufacturers before purchasing	3670.5	-1.85	.06

\* Significant (values are less than or equal 0.05)

The table below shows that there are improvements in the local and international demand, customer awareness, and product image. This result clarifies the significant increase in the exported quantities (as shown in figure 1.5).

#### **Demand Conditions – Mean Rank**

<b>No</b>	<b>Element</b>	<b>Country+</b>	<b>Mean Rank</b>
1	Local demand	Jordan 2003 Jordan 2006	71.65 114,72
2	International demand	Jordan 2003 Jordan 2006	80.89 148.03
3	Product image in the international markets	Jordan 2003 Jordan 2006	87.12 107.87
4	Customer awareness with regard to product quality standards	Jordan 2003 Jordan 2006	85.98 108.38
5	Sophisticated customers visit many manufacturers before purchasing	Jordan 2003 Jordan 2006	90.70 106.28

+ Number of respondents (Jordan 2003= 62, Jordan 2006 = 140)

## Related and Supporting Industries

The table shows that there are significant differences in the relationship between the SMEs working in processing the natural stone sector and banks, insurance firms, research and training centers, local manufacturers, public institutes, and firms from other sectors.

### Related and Supporting Industries – Mann-Whitney Test

	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Supplier buyer relationships have depended on the family and personal ties	4285	-.15	.87
The relationship with local banks	2657.5	-4.8	.00*
The relationship with insurance firms	2729	-4.61	.00*
The relationship with research and training centers and universities	2162	-6.16	.00*
The relationship with local manufacturers	2820.5	-4.1	.00*
The relationship with public institutes	2940	-3.83	.00*
The relationship with governmental institutes	4306	-.097	.92
The relationship with stone cutting firms in the same region	4219.5	-.39	.72
The relationship with firms from other sectors (design/ marketing)	2939	-3.9	.00*

\* Significant (values are less than or equal 0.05)

Unfortunately, there are deteriorations in the relationship between the SMEs and the related and supporting industries as shown in the following table. This result may assure that establishing the Qualifying Industrial Zones (QIZ) did not help building related industries. As mentioned in the text, the Middle East experienced a new kind of Free Economic Zone (FEZ) called Qualified Industrial Zones. The US-Israel Implementation Act defines QIZ as the territory of Israel and Jordan or Israel and Egypt designated locally as an enclave where merchandise may enter without payment of duty or excise taxes. The QIZ program allows the Jordanian kingdoms' business community to export to the US free of duties and restrictions, eliminating tariffs and other commercial barriers,

providing the sum of the cost or value of material produced in the West Bank, Gaza Strip, in other QIZs, or in Israel, plus, the direct costs of processing operations is not less than 35% of the price paid by the US buyer. The QIZs have not produced backward linkage to any significant extent. The QIZ sector remains heavily dependent on importing intermediate goods, materials, and accessories. Ninety to ninety-five per cent of fabrics used in QIZ production are imported. Companies operating in the QIZ are labor intensive, low-tech assembly firms, with scant access to advanced technology. Thus, the transfer of technology is practically confined to the labor aspect alone. Thus, the FEZ creates little synergy between firms located in the free zone and the existing business infrastructure in the local community.

#### **Related and Supporting Industries – Mean Rank**

<b>No</b>	<b>Element</b>	<b>Country+</b>	<b>Mean Rank</b>
1	Supplier buyer relationships have depended on the family and personal ties	Jordan 2003 Jordan 2006	100.61 101.89
2	The relationship with local banks	Jordan 2003 Jordan 2006	128.64 89.48
3	The relationship with insurance firms	Jordan 2003 Jordan 2006	127.48 89.99
4	The relationship with research and training centers and universities	Jordan 2003 Jordan 2006	136.63 85.94
5	The relationship with local manufacturers	Jordan 2003 Jordan 2006	126.01 90.65
6	The relationship with public institutes	Jordan 2003 Jordan 2006	124.08 91.50
7	The relationship with governmental institutes	Jordan 2003 Jordan 2006	100.95 101.74
8	The relationship with stone cutting firms in the same region	Jordan 2003 Jordan 2006	99.56 102.36
9	The relationship with firms from other sectors (design/ marketing)	Jordan 2003 Jordan 2006	124.10 91.49

+ Number of respondents (Jordan 2003= 62, Jordan 2006 = 140)

### Balanced Scored Card

The table below shows that there are significant differences in the SMEs' performance within the necessary time to develop new generations of products, customer satisfaction, and customer keep on.

### Balanced Scored Card

	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Percentage of new products of total turnover	3702.0	-1.757	.07
Time necessary to develop new generation of products	3224.5	-3.091	.02*
Customer satisfaction	3322.5	-2.875	.00*
Your market share	3698.5	-1.763	.07
Customer keep on	3413.0	-2.580	.01*
Your employees satisfaction	3842.0	-1.416	.15
Employees keep on	3900.5	-1.26	.20
Productivity of your employees	3744.0	-1.67	.09
Return on Investment	3948.5	-1.07	.28
Profitability	4242.0	-.27	.78
Revenue growth	3875.0	-1.37	.17
Cost reduction	4088.0	-.69	.49
Exportation	3769.5	-1.59	.11

\* Significant (values are less than or equal 0.05)

The data shows that there are deteriorations within the necessary time to develop new generation of products, customer satisfaction, and customer keep on.

### Balanced Scored Card – Mean Rank

No	Element	Country +	Mean Rank
1	Percentage of new products of total turnover	Jordan 2003 Jordan 2006	111.79 96.94
2	Time necessary to develop new generation of products	Jordan 2003 Jordan 2006	119.49 93.53
3	Customer satisfaction	Jordan 2003 Jordan 2006	117.91 94.23
4	Your market share	Jordan 2003 Jordan 2006	111.85 96.92
5	Customer keep on	Jordan 2003 Jordan 2006	116.45 94.88
6	Your employees satisfaction	Jordan 2003 Jordan 2006	109.53 97.94
7	Employees keep on	Jordan 2003 Jordan 2006	108.59 98.36
8	Productivity of your employees	Jordan 2003 Jordan 2006	111.11 97.24
9	Return on Investment	Jordan 2003 Jordan 2006	95.19 104.30
10	Profitability	Jordan 2003 Jordan 2006	103.08 100.80
11	Revenue growth	Jordan 2003 Jordan 2006	109.48 97.96
12	Cost reduction	Jordan 2003 Jordan 2006	97.44 103.30
13	Exportation	Jordan 2003 Jordan 2006	110.70 97.43

+ Number of respondents (Jordan 2003 = 62, and Jordan 2006 = 140)

## Five Forces

The data shows that there are significant differences in the threats of rivals, bargaining power of buyers, and bargaining power of suppliers and the threat of substitutes.

### Five Forces – Mann-Whitney Test

	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
The intensity of rivals	800.50	-9.584	.00*
The power of buyers	936.00	-9.261	.00*
The power of suppliers	809.50	-9.533	.00*
The threat of substitutes	914.50	-9.222	.00*
The threat of new entry	3887.00	-1.219	.22

\* Significant (values are less than or equal 0.05)

The table below shows that the threats of the rivals, power of buyers, and power of suppliers were decreased while the threat of substitutes was increased. It means that the industry structure became more attractive, and the industry became more profitable.

### Five Competitive Forces – Mean Rank

No	Element	Country+	Mean Rank
1	Intensity of rivals	Jordan 2003	158.59
	Power of buyers	Jordan 2006	76.22
2	Power of suppliers	Jordan 2003	156.40
	Threat of substitutes	Jordan 2006	77.19
3	Threat of entry	Jordan 2003	158.44
	Intensity of rivals	Jordan 2006	76.28
4	Power of buyers	Jordan 2003	46.25
	Power of suppliers	Jordan 2006	125.97
5	Threat of substitutes	Jordan 2003	94.19
		Jordan 2006	104.74

+ Number of respondents (Jordan 2003= 62, Jordan 2006 = 140)

## Computer and Internet Usage

The data shows that the percentage of respondents using the computer was increased from (58.1%) in 2003 to (80.7%) in 2006. As well, the percentage of respondents using the Internet was increased from (35.5%) in 2003 to (60.7%) in 2006.

### Computer and Internet Usage - Percentage

Computer Usage		
	Yes	No
<b>Jordan 2003</b>	58.1%	41.9%
<b>Jordan 2006</b>	80.7%	19.3%
Internet Usage		
	Yes	No
<b>Jordan 2003</b>	35.5%	64.5%
<b>Jordan 2006</b>	60.7%	39.3%

## Generic Strategies

The data shows that the percentage of the SMEs that are implementing the differentiation strategy was (37%) in 2003 and became (29.3%) in 2006. While, the percentage of the SMEs implementing the low cost strategy was (25.7%) in 2003 and it became (47.1%) in 2006. Furthermore, the data shows that the percentage of the SMEs focusing in specific niche in the market was (45.1%) in 2003 and the percentage became (43.6%) in 2006.

### Generic Strategies

		Generic Strategy							
		1	2	3	4	5	6	7	8
<b>Jordan 2003</b>	%	17.7	1.6	4.8	1.6	17.7	17.7	22.6	16.1
<b>Jordan 2006</b>	%	27.1	5	10.7	4.3	22.9	1.4	20.7	7.9

Unfortunately, more SMEs moved towards implementing the low cost strategy. It means that these firms are competing with each other based on the price rather than innovation and differentiation. This result may clarify the decrease in the different elements of the balanced scored card.

## Appendix E

### Tukey HSD – Generic Strategies and Competitive Advantage

In order to test the influence of the different scenarios of the generic strategies, the Tukey test is used. The Tukey test is a procedure based on the studentized range distribution, using critical values  $q$ . like the F distribution, the  $q$  distribution is characterized by two parameters that specify which particular distribution applies (Saunders et al 2000).

#### Tukey HSD<sup>31</sup> – Generic Strategy and Competitive Advantage

Strategy	N	1	2	3	4
7	72	34.93			
5	91	39.51			
1	105		54.92		
3	95		56.31		
6	62			67.80	
8	116			72.71	72.71
4	56			73.90	7.90
2	55				75.00
Sig.		.36	.99	.07	.96

The Tukey test divides the eight scenarios into 4 groups. Group four consists of the strategies 2, 4 and 8. These strategies have the highest influence on the competitive advantage. Group three consists of the strategies 4, 8 and 6. Group 2 consists of the strategies 3 and 1 while group 1 consists of the strategies 5 and 7. Group 1 has the lowest influence on the competitive strategy since they are focusing on offering standard products at no low cost.

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<sup>31</sup> Transformation process has been conducted by converting very negative to 0, negative to 25, accepted into 50, positive to 75, and very positive to 100.

## **Appendix F**

### **Test Statistics<sup>32</sup>**

The two main approaches to research are deductive and inductive. In the deductive approach, theory, hypotheses and design of research strategy are developed to test the hypotheses. In the inductive approach data are collected and a theory as a result of the data analysis is developed. In this research study the deductive approach is used.

In order to apply the deductive approach, the following steps are followed:

- √ Deducting a hypothesis (a testable proposition about the relationship between two or more events or concepts) from the theory
- √ Expressing the hypothesis in operational terms which propose a relationship between two scientific variables
- √ Testing this operational hypothesis. This will involve an empirical inquiry
- √ Examining the specific outcomes of the inquiry. It will either tend to confirm the theory or indicate the need for its modification
- √ If necessary, modifying the theory in the light of the findings.

It is important to test the hypotheses that inductively emerge from the data by seeking alternative explanations and negative examples that do not conform to the pattern or relationship being tested. By rigorously testing the propositions against the data, looking for alternative explanations and seeking to explain why negative cases occur, there will be an opportunity to move towards the development of valid and well-grounded conclusions. Thus, the validity of the conclusions will be verified by the ability to withstand alternative explanations and the nature of negative cases.

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<sup>32</sup> The main reference for the test statistics is "Statistics for Modern Business Decisions" for Lapin, 1993.

## Appendix F-1

### Test Statistic - One Way Analysis of Variance (One-Way ANOVA)

Each sample may be represented by symbol  $X_{ij}$ , where i refer to the row or observation number and j refers to the column. This matrix format provides the experimental layout. In each column, the values are the sample observations made from the corresponding populations.

The following expression is used to compute the sample mean for the jth column:

$$\bar{X}_j = \frac{\sum_i X_{ij}}{r}$$

Where all the observations in the jth column are summed and divided by r, where r is the number of observations per treatment or the number of rows. To facilitate testing the null hypothesis, the data are pooled in calculating the grand mean:

$$\bar{X} = \frac{\sum_j \sum_i X_{ij}}{rc}$$

Where c is the number of columns. The resultant total is divided by the combined sample size.

The analysis of variance procedure considers the collective sums of individual squared deviations. These express the amount of variation about the respective means that is exhibited by the sample values.

Using the sum of squares, the relation may be expressed as:

Total variation (SSTO) = Treatments variation (SSTR) + Error variation (SSE)

$$\text{Where SSTR} = r \sum (\bar{X}_j - \bar{X})^2$$

SSTR is called the explained variation because it is obtained from differences in the sample means.

$$SSE = \sum \sum (X_{ij} - \bar{X}_j)^2 = SSTO - SSTR$$

SSE means the unexplained variation because it measures differences between sample values that are due to chance variation.

As a test statistic, there is a need for a summary measure to express how much the sample results deviate from what is expected when the null hypothesis is true. This may be achieved by comparing the explained and the unexplained variations. To find this ratio, there is a need to find treatment mean square and error mean square.

$$\text{Treatment mean square} = MSTR = \frac{SSTR}{c - 1}$$

$$\text{Error mean square} = MSE = \frac{SSE}{(r - 1)c}$$

$$\text{The test statistic for analysis of variance } F = \frac{MSTR}{MSE}$$

For the null hypothesis, we expect values of F to be close to 1, because MSTR and MSE are both unbiased estimators of common population variance. To formulate a decision rule, there is a need to establish a sampling distribution for the test statistic. From this, the critical path value could be determined to tell whether the calculated value F is large enough to reject the null hypothesis. The probability distribution to do this is called F distribution.

## Appendix F-2

### Test Statistic - The Kruskal-Wallis Test

The primary difference between the F test and the Kruskal-Wallis test is that the latter is based on a test statistic computed from ranks determined for pooled sample observations. Its null hypothesis is that the rank assigned to a particular observation has an equal chance of being any number between 1 and n, regardless of the sample group to which it belongs.

At a significance level of  $\alpha = 0.05$ , the researcher tests the null hypothesis that there are no significant differences between major groups. The alternative hypothesis is that there are significant differences between groups. For this test statistic, there is a need to compare variablies in the ranks within each column. The sum of ranks for each category  $T_j$  is computed. A sum of the squares of these sums is then obtained. The following expression is used to calculate the Kruskal-Wallis test statistic:

$$K = \frac{12}{n(n+1)} \left( \frac{T_j^2}{n_j} \right) - 3(n+1)$$

Where  $n = \sum n_j$

The sampling distribution of K is approximately a chi-square distribution with m-1 degrees of freedom, where m is the number of categories. To find the critical value, we use chi-square distribution which provides critical values for specified tail areas.

## Appendix F-3

### Test Statistic - The Mann-Whitney Test

The Mann-Whitney test is used to compare two populations using independent samples. In this test, the combined sample data are ranked, and then the sum  $W$  of the sample  $A$  ranks is calculated. The test statistic is:

$$U = n_A n_B + \frac{(n_A + 1)n_A}{2} - W$$

The normal curve serves as the approximate sampling distribution of  $U$  test. The normal deviate for the sample results is provided by:

$$Z = \frac{U - \frac{n_A n_B}{2}}{\sqrt{\frac{n_A n_B (n_A + n_B + 1)}{12}}}$$

All null hypotheses tested under this procedure share a common assumption that the samples were selected from identical means. The test is therefore based on the principle that the two samples may be treated as if they came from a common population. The data for the two samples may be combined under the various null hypotheses. The observed values in the pooled sample are then ranked from smallest to largest, the smallest value is assigned a rank of 1, the next smallest value is ranked 2, and so forth. The samples are then separated and the sums of the ranks are calculated for each sample.

## **Appendix G**

### **Descriptive Statistics**

Descriptive statistics enable to describe and compare viable numerically. This can be seen by plotting either a frequency polygon or a histogram for continuous data or a frequency polygon or bar chart for discrete data. If the diagram shows a bunching to the left and a long tail to the right then data are positively skewed. If the converse is true, the data are negatively skewed. Statistics to describe a variable focus on two aspects are central tendency and dispersion

#### **Describing the central tendency**

When describing data for both samples and populations quantitatively it is usual to provide some general impression of values that could be seen as common, middling or average. Three ways of measuring the central tendency most used are:

- ✓ values which occurs most frequently (mode)
- ✓ middle value or mod-point after the data have been ranked (median)
- ✓ value which includes all data values in its calculation (mean)

#### **Describing the dispersion**

It is important to describe how the data values are dispersed around the central tendency. Two of the most frequently used ways of describing the dispersion are:

- ✓ difference within the middle 50 percent of values (inter-quartile range)
- ✓ extent to which values differ from the mean (standard deviation)

The tables below shows the mean, standard deviation, minimum and maximum values, and skewness of the factor conditions, demand conditions, related and supporting industries, five competitive forces, balanced scored card and the impact of the ICT on the competitive elements of the SMEs working in the natural stone sector in Jordan, Turkey and Italy.

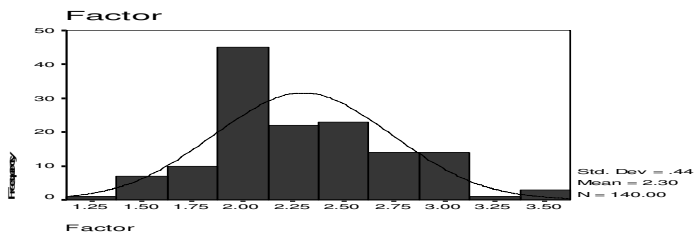
## Appendix G - 1

### Descriptive Statistics – Factor Conditions

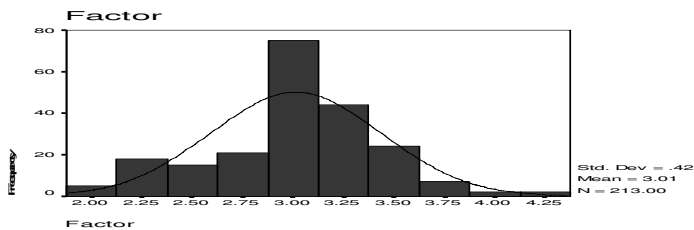
Italy has a higher mean (3.61) and standard deviation (0.47) in comparison with Turkey and Jordan. As well, Italy has the highest range (maximum value – minimum value = 3.33). The skewness shows that the data in Jordan skewed to the right while the data in Turkey and Italy skewed to the left.

**Table 1 – Factor Conditions**

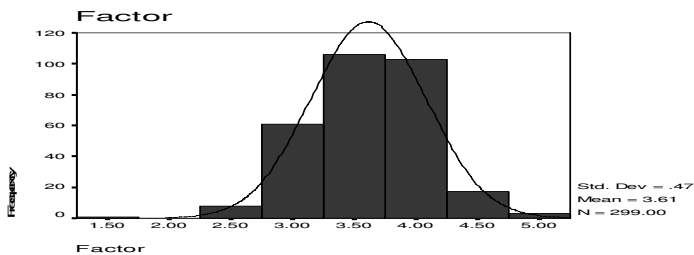
	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	2.30	3.01	3.61	3.13
Std. Deviation	.44	.42	.47	.67
Minimum	1.22	1.89	1.67	1.22
Maximum	3.56	4.33	5.00	5.00
Skewness	.39	-.20	-.19	-.20



Jordan



Turkey



Italy

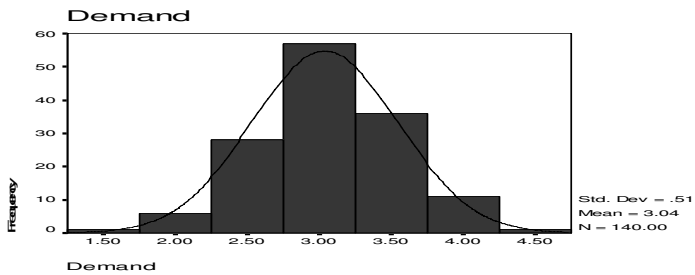
## Appendix G - 2

### Descriptive Statistics – Demand Conditions

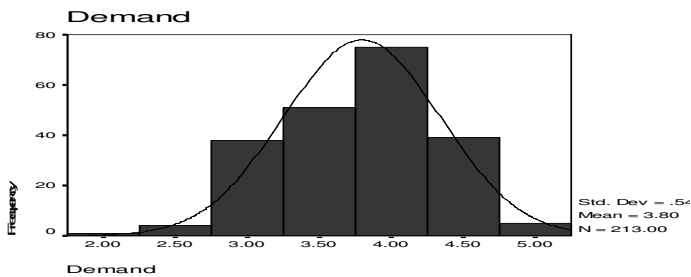
Jordan has a lower mean (3.04) and standard deviation (0.51) in comparison with Turkey and Italy. On the contrary, Jordan has the highest range (3.00). The skewness shows that the data in Jordan, Turkey and Italy skewed to the left.

**Table 2 – Demand Conditions**

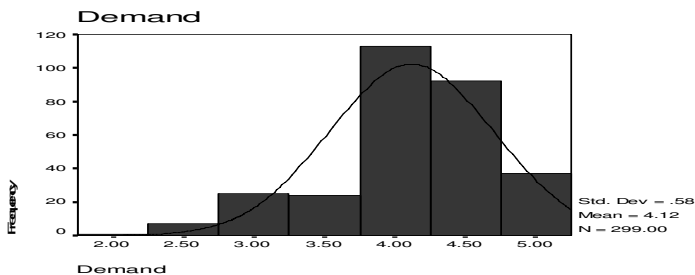
	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	3.04	3.80	4.12	3.77
Std. Deviation	.51	.54	.58	.69
Minimum	1.4	2.20	2.20	1.40
Maximum	4.4	5.00	5.00	5.00
Skewness	-.26	-.21	-.80	-.37



Jordan



Turkey



Italy

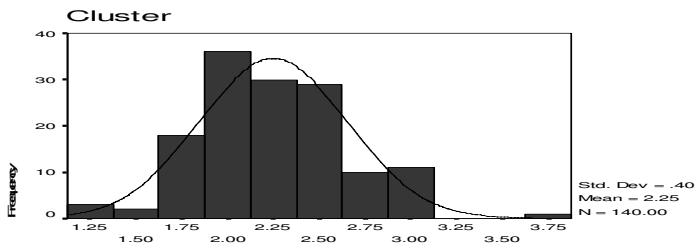
## Appendix G - 3

### Descriptive Statistics – Related and Supporting Industries

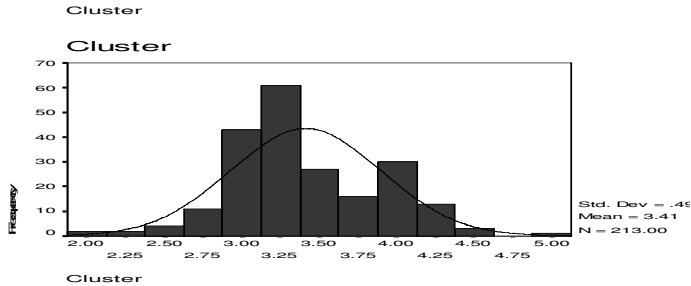
Jordan has a lower mean (2.25) and standard deviation (0.40) in comparison with Turkey and Italy. As well, Jordan has the lowest range (2.45). The skewness shows that the data in Jordan and Turkey skewed to the right while the data in Italy skewed to the left.

**Table 3 – Related and Supporting Industries**

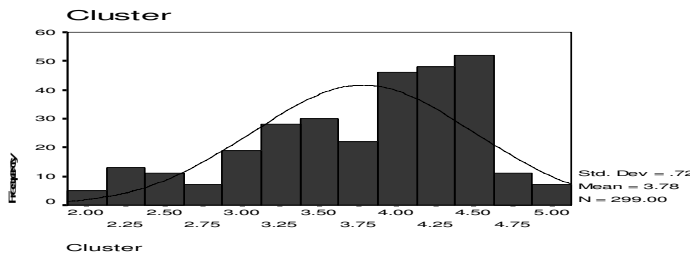
	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	2.25	3.41	3.78	3.33
Std. Deviation	.40	.49	.72	.83
Minimum	1.33	1.89	2.00	1.33
Maximum	3.78	5.00	5.00	5.00
Skewness	.25	.21	-.64	-.18



Jordan



Turkey



Italy

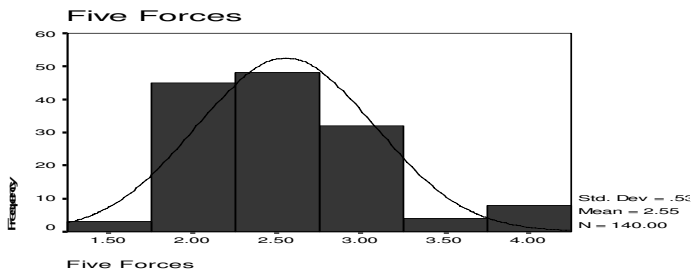
## Appendix G - 4

### Descriptive Statistics – Five Forces

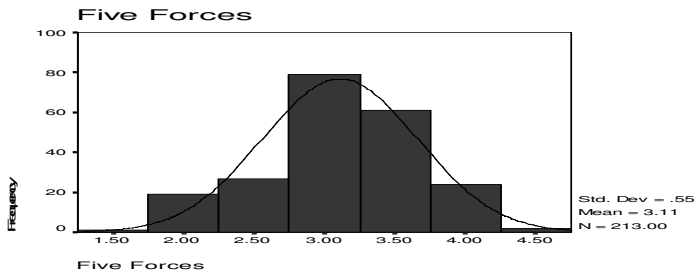
Jordan has a lower mean (2.50) and standard deviation (.53) in comparison with Turkey and Italy. While Italy has the lowest range (2.6). The skewness shows that the data in Jordan and Italy skewed to the right while the data in Turkey skewed to the left.

**Table 4 – Five Forces**

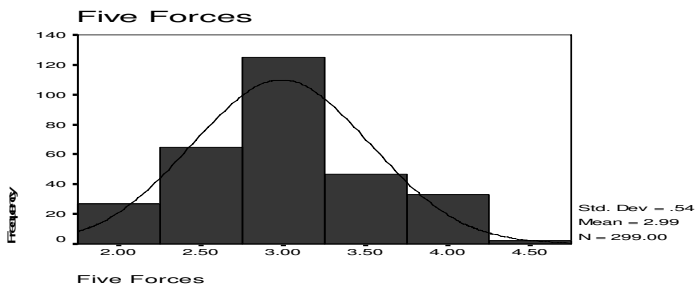
	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	2.50	3.11	2.99	2.93
Std. Deviation	.53	.55	.54	.58
Minimum	1.4	1.60	1.80	1.40
Maximum	4.2	4.60	4.40	4.60
Skewness	.99	-.36	.27	.13



Jordan



Turkey



Italy

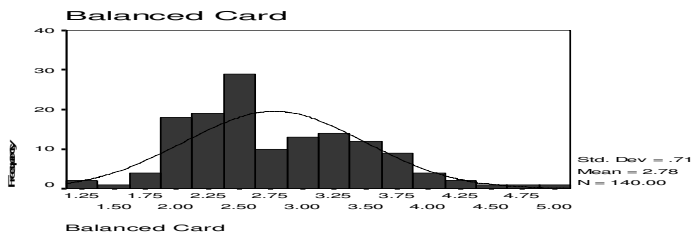
## Appendix G - 5

### Descriptive Statistics – Balanced Scored Card

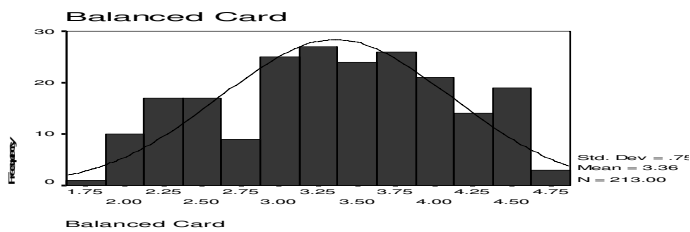
Jordan has a lower mean (2.78) in comparison with Turkey and Italy while Italy has the lowest standard deviation (0.66). Turkey and Italy have the lowest range (3.08). The skewness shows that the data in Jordan skewed to the right while the data in Turkey and Italy skewed to the left.

**Table 5 – Balanced Scored Card**

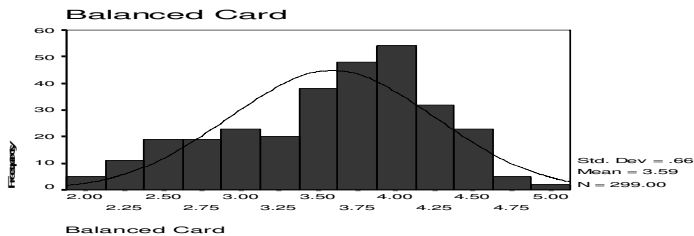
	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	2.78	3.36	3.59	3.33
Std. Deviation	.71	.75	.66	.76
Minimum	1.15	1.77	1.92	1.15
Maximum	4.92	4.85	5.00	5.00
Skewness	.51	-.12	-.47	-.20



Jordan



Turkey



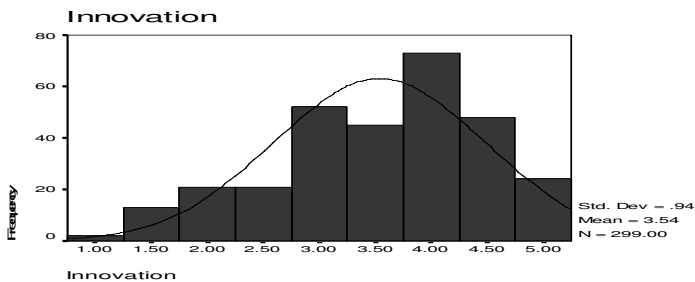
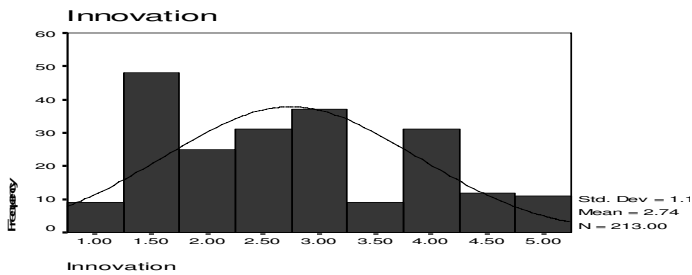
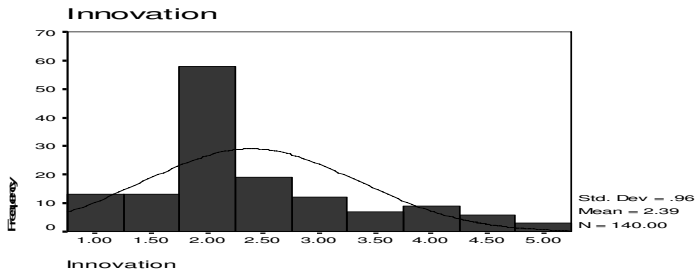
Italy

## *Innovation*

Jordan has a lower mean (2.39) in comparison with Turkey and Italy. The range in the three countries is the same (4.00). The skewness shows that the data in Jordan and Turkey skewed to the right while the data in Italy skewed to the left.

**Table 6 – Innovation**

	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	2.39	2.74	3.54	3..03
Std. Deviation	.96	1.12	.94	1.11
Minimum	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00
Skewness	.92	.36	-.50	.02

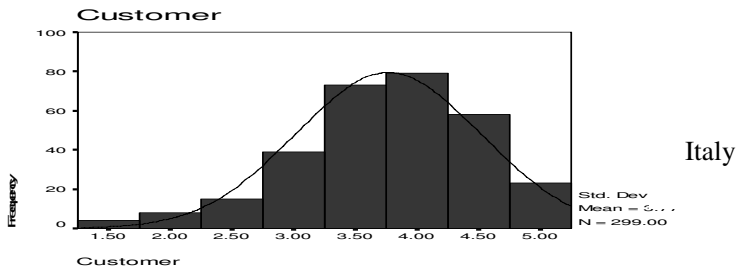
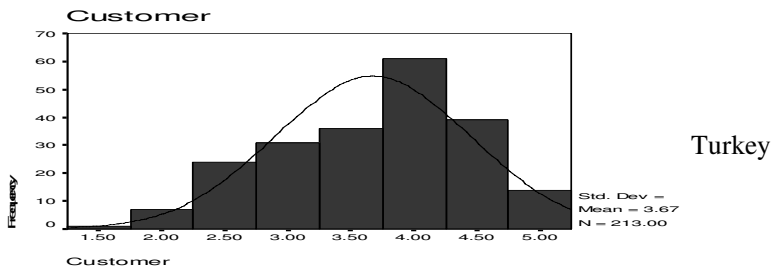
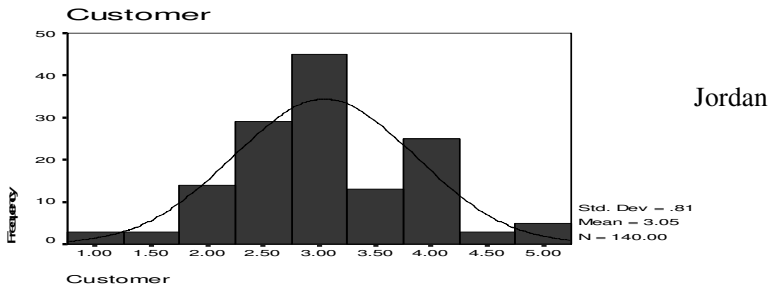


## *Customer Satisfaction*

Jordan has a lower mean (3.05) and a highest standard deviation (0.81) in comparison with Turkey and Italy. As well, Jordan has the highest range (4.00). The skewness shows that the data in Jordan skewed to the right while the data in Turkey and Italy skewed to the left.

**Table 7 – Customer Satisfaction**

	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	3.05	3.67	3.77	3.58
Std. Deviation	.81	.77	.75	.82
Minimum	1.00	1.67	1.33	1.00
Maximum	5.00	5.00	5.00	5.00
Skewness	.15	-.33	-.56	-.36

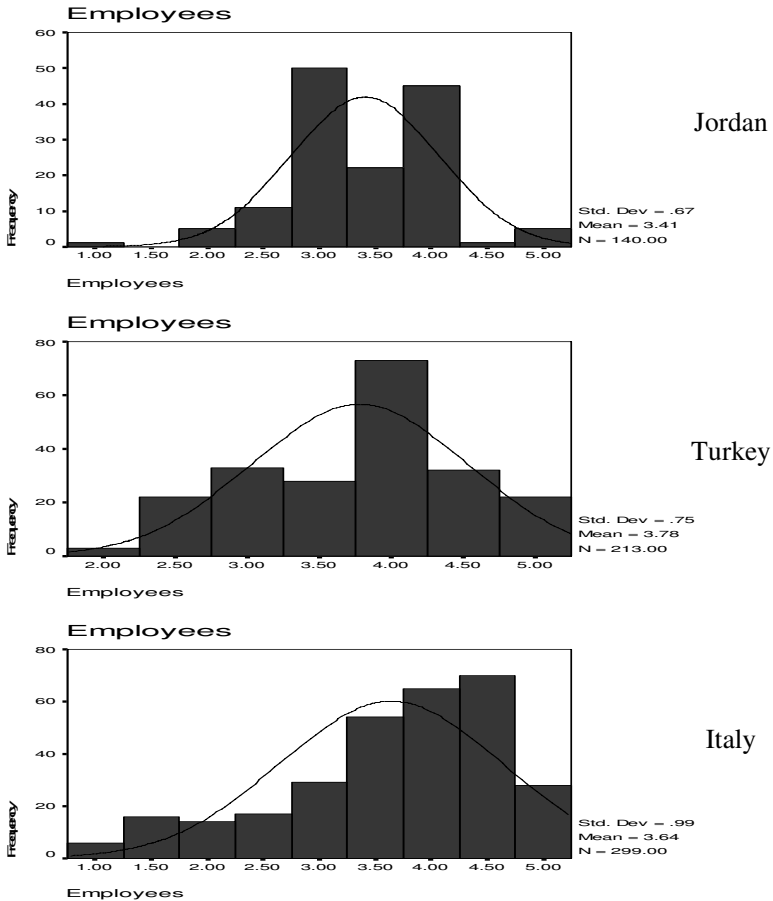


## *Employee Satisfaction*

Jordan has a lower mean (3.41) and standard deviation (0.67) in comparison with Turkey and Italy. Jordan and Italy have the same range (4.00). The skewness shows that the data in Jordan, Turkey and Turkey skewed to the left.

**Table 8 – Employee Satisfaction**

	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	3.41	3.78	3.64	3.63
Std. Deviation	.67	.75	.99	.86
Minimum	1.00	2.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00
Skewness	-.17	-.26	-.85	-.63

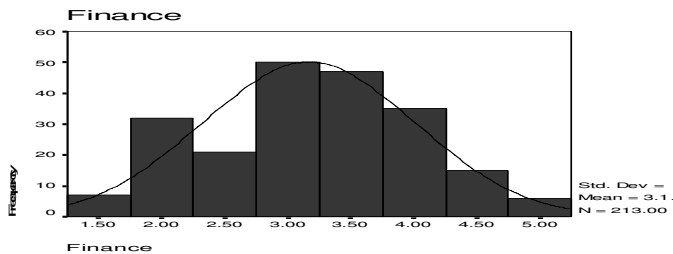
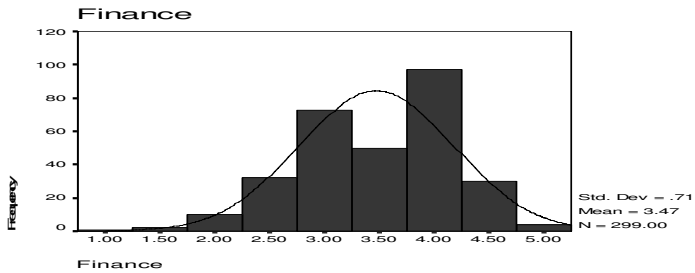
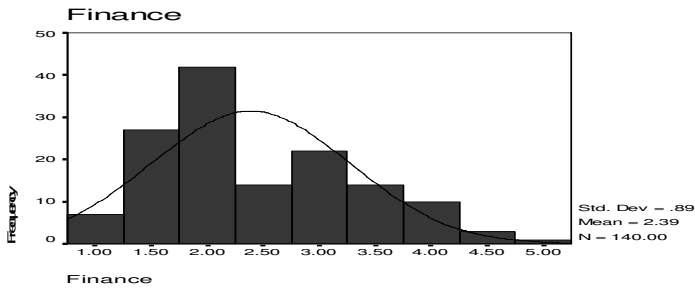


## *Financial Indicators*

Jordan has a lower mean and a maximum standard deviation in comparison with Turkey and Italy. Jordan and Italy have lowest ranges (3.80) in comparison with Turkey. The skewness shows that the data in Jordan skewed to the right while the data in Turkey and Italy skewed to the left.

**Table 9 – Financial Indicators**

	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	2.39	3.17	3.47	3.13
Std. Deviation	.89	.85	.71	.89
Minimum	1.00	1.00	1.20	1.00
Maximum	4.80	5.00	5.00	5.00
Skewness	.58	-.03	-.37	-.26



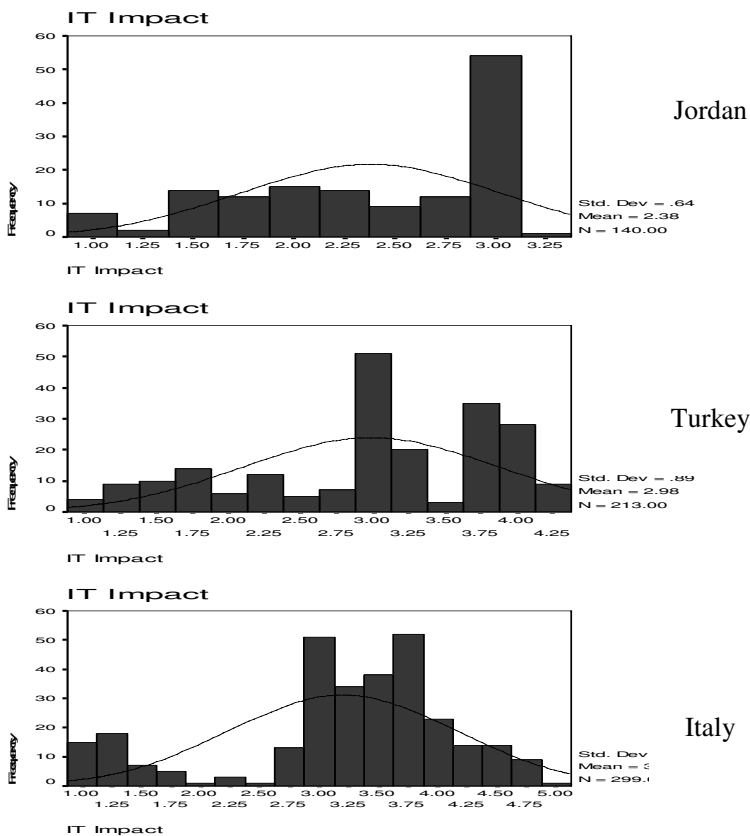
## Appendix G - 6

### Descriptive Statistics – The ICT Impact

Jordan has a lower mean (2.38) and standard deviation (0.64) in comparison with Turkey and Italy. As well, Jordan has the lowest range (2.14). The skewness shows that the data in Jordan, Turkey and Italy skewed to the left.

**Table 10**

	<b>Jordan</b>	<b>Turkey</b>	<b>Italy</b>	<b>Total</b>
Mean	2.38	2.98	3.20	2.95
Std. Deviation	.64	.89	.95	.92
Minimum	1.00	1.00	1.00	1.00
Maximum	3.14	4.36	4.93	4.93
Skewness	-.58	-.56	-.91	-.47



## **Appendix H**

### **Regression Analysis**

The primary goal of regression analysis is to obtain predictions of one variable using the known values of another. These predictions are made by employing an equation such as

$$Y = a + bX$$

This regression equation provides the estimate of an unknown variable  $Y$  when the value of another variable  $X$  is known. It is worth mentioning that the predictions made from the regression equation are subject to error and are only estimates of the true values.

Regression analysis begins with a set of data involving pairs of observed values, one number for each variable. Then, a suitable function is found to provide the predicted value of  $Y$  for a given value of  $X$ . The clue to finding an appropriate regression equation can be found in the general pattern presented by the points in the scatter diagram.

## Appendix I -1

### Incomparability of Measurement in Survey Research within Countries

#### (Jordan, Turkey, and Italy)

In order to testify whether there is significant incomparability within the same country, the following test is conducted. M1 presents the mean of each question by calculating the average of other questions that measure the same concept after excluding the question under investigation, assuming these questions do not have DIF. M2 presents the mean of the investigated question. As an example, the mean of acquiring capital is calculated by the average of the other factor conditions while M2 is the mean of acquiring capital.

The data shows that there is a deviation between M1 and M2. This deviation is due to the inter-personal incomparability within the country. As well, the data shows that Jordanians reply less in most cases. Tables below present the means and deviations of the factor conditions, demand conditions, related and supporting industries, five forces, balanced scored card, and impact of the ICT on competitive elements.

**Table 1. Factor Conditions**

	<b>Jordan</b>			<b>Turkey</b>			<b>Italy</b>		
	M1	M2	Dev	M1	M2	Dev	M1	M2	Dev
Capital	2.3	2.98	-0.68	3.38	2.96	0.42	3.93	3.57	0.36
Information	2.25	1.41	0.84	3.33	2.97	0.36	4.17	3.54	0.63
Political & economic	2.53	2.69	-0.16	2.26	3.10	-0.84	2.5	3.75	-1.25
Bureaucratic rules	1.71	2.37	-0.66	2.37	3.09	-0.72	3.38	3.64	-0.26
Infra. availability	2.48	2.27	0.21	2.59	3.06	-0.47	3.9	3.57	0.33
Infrastructure cost	2.38	2.28	0.1	2.67	3.05	-0.38	3.46	3.63	-0.17
Raw material quality	1.56	2.39	-0.83	3.39	2.96	0.43	3.09	3.68	-0.59
Qualifications	1.84	2.35	-0.51	3.61	2.93	0.68	3.98	3.56	0.42
Market accessibility	3.63	2.13	1.5	3.51	2.95	0.56	4.13	3.54	0.59

M1 is the mean of the factor conditions

M2 is the mean of the factor conditions excluding the question under the investigation (do not have DIF).

Dev is the deviation between M1 and M2 that measures interpersonal incomparability.

**Table 2. Demand Conditions**

	<b>Jordan</b>			<b>Turkey</b>			<b>Italy</b>		
	M1	M2	Dev	M1	M2	Dev	M1	M2	Dev
Local demand	3.51	2.91	0.6	3.28	2.92	0.36	4.27	4.07	0.2
International demand	1.69	3.37	-1.68	4.31	3.66	0.65	4.23	4.08	0.15
Product image	3.58	2.9	0.68	3.71	3.81	-0.1	4.28	4.07	0.21
Customer awareness	3.18	3	0.18	3.67	3.82	-0.15	4.01	4.14	-0.13
Sophistication	3.23	2.98	0.25	4.01	3.74	0.27	3.79	4.19	-0.4

M1 is the mean of the demand conditions

M2 is the mean of the demand conditions excluding the question under the investigation (do not have DIF).

Dev is the deviation between M1 and M2 that measures interpersonal incomparability.

**Table 3. Related and Supporting Industries**

	<b>Jordan</b>			<b>Turkey</b>			<b>Italy</b>		
	M1	M2	Dev	M1	M2	Dev	M1	M2	Dev
Supplier- buyer	3.61	2.07	1.54	3.58	3.39	0.19	3.42	3.82	-0.4
Local banks	1.61	2.32	-0.71	4.24	3.3	0.94	3.74	3.78	-0.04
Insurance firms	1.98	2.28	-0.3	3.36	3.41	-0.05	3.7	3.79	-0.09
Research and training	1.53	2.33	-0.8	3.45	3.4	0.05	3.9	3.76	0.14
Local manufacturers	2.37	2.23	0.14	3.71	3.37	0.34	3.88	3.76	0.12
Public institutes	2.58	2.2	0.38	3.44	3.4	0.04	3.78	3.78	0
Gov. institutes	2.29	2.24	0.05	2.52	3.52	-1	3.77	3.78	-0.01
Stone cutting firms	2.63	2.2	0.43	2.9	3.47	-0.57	3.97	3.75	0.22
Other sectors (design/ marketing)	1.63	2.32	-0.69	3.51	3.39	0.12	3.88	3.76	0.12

M1 is the mean of the related and supporting industries

M2 is the mean of the related and supporting industries excluding the question under the investigation (do not have DIF).

Dev is the deviation between M1 and M2 that measures interpersonal incomparability.

**Table 4. Five Forces**

	<b>Jordan</b>			<b>Turkey</b>			<b>Italy</b>		
	M1	M2	Dev	M1	M2	Dev	M1	M2	Dev
Intensity of rivals	1.94	2.7	-0.76	2.86	3.17	-0.31	3.2	2.93	0.27
Power of buyers	1.8	2.73	-0.93	3.03	3.12	-0.09	2.76	3.04	-0.28
Power of suppliers	1.8	2.73	-0.93	3.02	3.13	-0.11	2.87	3.01	-0.14
Threat of substitutes	4.04	2.17	1.87	3.36	3.04	0.32	2.66	3.06	-0.4
Threat of new entry	3.17	2.39	0.78	3.27	3.07	0.2	3.45	2.87	0.58

M1 is the mean of the five forces

M2 is the mean of the five forces excluding the question under the investigation (do not have DIF).

Dev is the deviation between M1 and M2 that measures interpersonal incomparability.

**Table 5. Balanced Scored Card**

	<b>Jordan</b>			<b>Turkey</b>			<b>Italy</b>		
	M1	M2	Dev	M1	M2	Dev	M1	M2	Dev
New products	2.57	2.21	0.36	2.95	2.54	0.41	3.59	3.48	0.11
Timing	2.21	2.57	-0.36	2.54	2.95	-0.41	3.48	3.59	-0.11
Customer satisfaction	3.12	3	0.12	3.75	3.63	0.12	3.83	3.73	0.1
Your market share	2.86	3.13	-0.27	3.54	3.74	-0.2	3.67	3.81	-0.14
Customer keep on	3.15	2.99	0.16	3.73	3.64	0.09	3.8	3.75	0.05
Emp. satisfaction	3.44	3.4	0.04	3.81	3.76	0.05	3.64	3.64	0
Employees keep on	3.54	3.35	0.19	3.8	3.77	0.03	3.67	3.63	0.04
Emp. Productivity	3.26	3.49	-0.23	3.73	3.8	-0.07	3.61	3.65	-0.04
Return on Investment	2.8	2.28	0.52	3.5	3.08	0.42	3.71	3.41	0.3
Profitability	2.36	2.39	-0.03	3.34	3.12	0.22	3.71	3.41	0.3
Revenue growth	2.28	2.41	-0.13	3.06	3.19	-0.13	3.55	3.45	0.1
Cost reduction	2.59	2.33	0.26	2.92	3.22	-0.3	2.9	3.61	-0.71
Exportation	1.91	2.5	-0.59	3.02	3.2	-0.18	3.48	3.46	0.02

M1 is the mean of the balanced scored card

M2 is the mean of the balanced scored card excluding the question under the investigation (do not have DIF).

Dev is the deviation between M1 and M2 that measures interpersonal incomparability.

**Table 6. Impact of the ICT**

	<b>Jordan</b>			<b>Turkey</b>			<b>Italy</b>		
	M1	M2	Dev	M1	M2	Dev	M1	M2	Dev
Transaction costs	2.07	2.4	-0.33	2.59	3.01	-0.42	3.23	3.19	0.04
Quality	2.36	2.37	-0.01	2.71	3	-0.29	3.48	3.17	0.31
New suppliers	2.06	2.4	-0.34	2.86	3	-0.14	3.39	3.18	0.21
New customers	2.05	2.4	-0.35	2.91	2.98	-0.07	3.57	3.16	0.41
Defense	2.51	2.36	0.15	3.05	2.97	0.08	3.1	3.2	-0.1
Large firms	2.49	2.36	0.13	3.1	2.97	0.13	2.9	3.21	-0.31
Market share	2.09	2.36	-0.27	3.06	2.97	0.09	2.96	3.21	-0.25
New markets	2.11	2.4	-0.29	3.08	2.97	0.11	3.17	3.19	-0.02
Flexibility	2.66	2.4	0.26	3.11	2.97	0.14	3.11	3.2	-0.09
Innovation	2.49	2.36	0.13	3.1	2.97	0.13	3.26	3.19	0.07
Control	2.73	2.35	0.38	3.02	2.98	0.04	3.16	3.19	-0.03
Job creation	2.76	2.34	0.42	3.04	2.97	0.07	3.17	3.19	-0.02
Firm's image	2.3	2.38	-0.08	3.07	2.97	0.1	3.24	3.19	0.05
Lack resources	261	2.36	258.64	3.08	2.97	0.11	3	3.2	-0.2

M1 is the mean of impact of the ICT on the competitive elements.

M2 is the mean of impact of the ICT on the competitive elements excluding the question under the investigation (do not have DIF).

Dev is the deviation between M1 and M2 that measures interpersonal incomparability.

## Appendix I -2

### Incomparability of Measurement in Survey Research between Countries (Jordan, Turkey, and Italy)

In order to testify whether there is a variation in responses, each survey question has been evaluated in turn by comparing it with an average of all the others that measure the same concept assuming that all the other questions do not have DIF on average, as each question moves in and out of the gold standard comparison group, is internally inconsistent (King 23004).

As an example, the average is calculated by finding means of the factor conditions excluding the question under investigation in the three countries. Mean presents the average of each question in each country. The deviation presents the incomparability between the three countries.

**Table 1. Factor Conditions**

		<b>Jordan</b>		<b>Turkey</b>		<b>Italy</b>	
	<b>Average*</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>
Acquiring capital	3.1	2.3	-0.8	3.38	0.28	3.93	0.83
Acquiring information	3.1	2.25	-0.85	3.33	0.23	4.17	1.07
Political and economic uncertainties	3.22	2.53	-0.69	2.26	-0.96	2.5	-0.72
Bureaucratic rules and regulations	3.19	1.71	-1.48	2.37	-0.82	3.38	0.19
Infrastructure availability	3.13	2.48	-0.65	2.59	-0.54	3.9	0.77
Infrastructure cost	3.15	2.38	-0.77	2.67	-0.48	3.46	0.31
Inconsistent raw material quality	3.16	1.56	-1.6	3.39	0.23	3.09	-0.07
Technical qualifications	3.1	1.84	-1.26	3.61	0.51	3.98	0.88
The market accessibility	3.04	3.63	0.59	3.51	0.47	4.13	1.09

\* The average is calculated by finding the average of the factor conditions after excluding the question that is under examination in order to avoid any incomparability

**Table 2. Demand Conditions**

		<b>Jordan</b>		<b>Turkey</b>		<b>Italy</b>	
	<b>Average*</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>
Local demand	3.77	3.51	-0.26	3.28	-0.49	4.27	0.5
International demand	3.79	1.69	-2.1	4.31	0.52	4.23	0.44
Product image in the international markets	3.73	3.58	-0.15	3.71	-0.02	4.28	0.55
Customer awareness with regard to product quality standards	3.79	3.18	-0.61	3.67	-0.12	4.01	0.22
Sophisticated customers visit many manufacturers before purchasing	3.78	3.23	-0.55	4.01	0.23	3.79	0.01

\* The average is calculated by finding the average of the demand conditions after excluding the question that is under examination in order to avoid any incomparability.

**Table 3. Five Forces**

		<b>Jordan</b>		<b>Turkey</b>		<b>Italy</b>	
	<b>Average*</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>
The intensity of rivals	2.96	1.94	-1.02	2.86	-0.1	3.2	0.24
The power of buyers	3	1.8	-1.2	3.03	0.03	2.76	-0.24
The power of suppliers	2.99	1.8	-1.19	3.02	0.03	2.87	-0.12
The threat of substitutes	2.87	4.04	1.17	3.36	0.49	2.66	-0.21
The threat of new entry	2.83	3.17	0.34	3.27	0.44	3.45	0.62

\* The average is calculated by finding the average of the five forces after excluding the question that is under examination in order to avoid any incomparability.

**Table 4. Related and Supporting Industries**

		<b>Jordan</b>		<b>Turkey</b>		<b>Italy</b>	
	<b>Average*</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>
Supplier buyer relationships have depended on the family and personal ties	3.3	3.61	0.31	3.58	0.28	3.42	0.12
The relationship with local banks	3.31	1.61	-1.7	4.24	0.93	3.74	0.43
The relationship with insurance firms	3.34	1.98	-1.36	3.36	0.02	3.7	0.36
The relationship with research and training centers and universities	3.34	1.53	-1.81	3.45	0.11	3.9	0.56
The relationship with local manufacturers	3.1	2.37	-0.73	3.71	0.61	3.88	0.78
The relationship with public institutes	3.32	2.58	-0.74	3.44	0.12	3.78	0.46
The relationship with governmental institutes	3.36	2.29	-1.07	2.52	-0.84	3.77	0.41
The relationship with stone cutting firms in the same region	3.33	2.63	-0.7	2.9	-0.43	3.97	0.64
The relationship with firms from other sectors (design/ marketing)	3.33	1.63	-1.7	3.51	0.18	3.88	0.55

\* The average is calculated by finding the average of the related and supporting industries after excluding the question that is under examination in order to avoid any incomparability.

**Table 5. Balanced Scored Card**

		<b>Jordan</b>		<b>Turkey</b>		<b>Italy</b>	
	<b>Average*</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>
Percentage of new products of total turnover	2.9	2.57	-0.33	2.95	0.05	3.59	0.69
Time necessary to develop new generation of products	3.16	2.21	-0.95	2.54	-0.62	3.48	0.32
Customer satisfaction	3.55	3.12	-0.43	3.75	0.2	3.83	0.28
Your market share	3.64	2.86	-0.78	3.54	-0.1	3.67	0.03
Customer keep on	3.55	3.15	-0.4	3.73	0.18	3.8	0.25
Your employees satisfaction	3.63	3.44	-0.19	3.81	0.18	3.64	0.01
Employees keep on	3.61	3.54	-0.07	3.8	0.19	3.67	0.06
Productivity of your employees	3.66	3.26	-0.4	3.73	0.07	3.61	-0.05
Return on Investment	3.06	2.8	-0.26	3.5	0.44	3.71	0.65
Profitability	3.09	2.36	-0.73	3.34	0.25	3.71	0.62
Revenue growth	3.14	2.28	-0.86	3.06	-0.08	3.55	0.41
Cost reduction	3.21	2.59	-0.62	2.92	-0.29	2.9	-0.31
Exportation	3.17	1.91	-1.26	3.02	-0.15	3.48	0.31

\* The average is calculated by finding the average of the balanced scored card after excluding the question that is under examination in order to avoid any incomparability.

**Table 6. Impact of the ICT**

		<b>Jordan</b>		<b>Turkey</b>		<b>Italy</b>	
	<b>Average*</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>	<b>Mean</b>	<b>Dev.</b>
Reduce transaction costs	2.96	2.07	-0.89	2.59	-0.37	3.23	0.27
Improve quality of product/service	2.94	2.36	-0.58	2.71	-0.23	3.48	0.54
Reach new suppliers	2.95	2.06	-0.89	2.86	-0.09	3.39	0.44
Reach new customers	2.94	2.05	-0.89	2.91	-0.03	3.57	0.63
Defend your self against competitors engaging in e-commerce	2.95	2.51	-0.44	3.05	0.1	3.1	0.15
Work with large firms (local and international)	2.95	2.49	-0.46	3.1	0.15	2.9	-0.05
Increase market share	2.96	2.09	-0.87	3.06	0.1	2.96	0
Enter new markets	2.95	2.11	-0.84	3.08	0.13	3.17	0.22
Increase the flexibility of your firm	2.94	2.66	-0.28	3.11	0.17	3.11	0.17
Increase your ability to innovate	2.94	2.49	-0.45	3.1	0.16	3.26	0.32
Improve control of your business process organization	2.94	2.73	-0.21	3.02	0.08	3.16	0.22
Increase job creation in your firm	2.94	2.76	-0.18	3.04	0.1	3.17	0.23
Improve the image of your firm	2.94	2.3	-0.64	3.07	0.13	3.24	0.3
Contribute to solving your problem of lack resources and access to technology	2.95	2.61	-0.34	3.08	0.13	3.1	0.05

\* The average is calculated by finding the average of the ICT impact of different competitive elements after excluding the question that is under examination in order to avoid any incomparability.

## Appendix I -3

### One-Sample Kolmogorov-Smirnov Test

The One-Sample Kolmogorov-Smirnov Test procedure compares the observed cumulative distribution function for a variable with a specified theoretical distribution, which may be normal, uniform, Poisson, or exponential. The Kolmogorov-Smirnov is computed from the largest difference (in absolute value) between the observed and theoretical cumulative distribution functions. This goodness-of-fit test tests whether the observations could reasonably have come from the specified distribution. In order to testify whether there are significant differences in the deviations from the mean or not, a five-step procedure is applied:

√ Formulating the null and alternative hypotheses

Null Hypothesis: Actual results fit with expected result

√ Selecting the test statistic and procedure

The non-parametric Kolmogorov-Smirnov one sample test is used.

√ Establishing the significance level

A significant level  $\alpha = 0.05$ .

√ Computing the value of test statistics

The Kolmogorov-Smirnov test statistic:  $D = \max \left| F_a(x) - F_e(x) \right|$

Where D is the maximum frequency deviation.

Deviation =  $F_a(x) - F_e(x)$

$F_a(x)$  is the actual cumulative frequency

$F_e(x)$  is the expected cumulative frequency

√ Making the decision

Accept Null Hypothesis if  $D \leq D_\alpha$

Reject Null Hypothesis if  $D > D_\alpha$

**Table 1. K-S One-Sample Test – Factor Conditions**

	<b>K-S</b>	<b>Deviation</b>	<b>Sig. (2 tailed)</b>
Acquiring capital	5.2	.20	0.00
Acquiring information	6.2	.24	0.00
Political and economic uncertainties	4.6	.18	0.00
Bureaucratic rules and regulations	4.2	.16	0.00
Infrastructure availability	4.7	.18	0.00
Infrastructure cost	5.1	.20	0.00
Inconsistent raw material quality	4.5	.17	0.00
Technical qualifications	5.5	.21	0.00
The market accessibility	6.6	.26	0.00

N= 652

**Table 2. K-S One-Sample Test – Demand Conditions**

	<b>K-S</b>	<b>Deviation</b>	<b>Sig. (2 tailed)</b>
Local demand	6.1	.24	0.00
International demand	6.2	.24	0.00
Product image in the international markets	6.2	.24	0.00
Customer awareness with regard to product quality standards	6.9	.27	0.00
Sophisticated customers	5.3	.21	0.00

N = 652

**Table 3. K-S One-Sample Test – Related and Supporting Industries**

	<b>K-S</b>	<b>Deviation</b>	<b>Sig. (2 tailed)</b>
Supplier buyer relationships	5.5	..27	0.00
The relationship with local banks	5.2	.20	0.00
The relationship with insurance firms	4.8	.19	0.00
The relationship with research and training	5.8	.22	0.00
The relationship with local manufacturers	6.1	.24	0.00
The relationship with public institutes	5.1	.20	0.00
The relationship with governmental institutes	4.7	.18	0.00
The relationship with stone cutting firms	5.2	.20	0.00
The relationship with firms from other sectors	5.3	.22	0.00

N = 652

**Table 4. K-S One-Sample Test – Five Forces**

	<b>K-S</b>	<b>Deviation</b>	<b>Sig. (2 tailed)</b>
The intensity of rivals	5.0	0.19	0.00
The power of buyers	5.0	0.19	0.00
The power of suppliers	5.3	0.20	0.00
The threat of substitutes	4.6	0.18	0.00
The threat of new entry	4.7	0.18	0.00

N = 652

**Table 5. K-S One Sample Test – Balanced Scored Card**

	<b>K-S</b>	<b>Deviation</b>	<b>Sig. (2 tailed)</b>
Percentage of new products of total turnover	4.6	.18	0.00
Time necessary to develop new products	4.5	.17	0.00
Customer satisfaction	6.0	.23	0.00
Your market share	5.4	.21	0.00
Customer keep on	6.1	.24	0.00
Your employees satisfaction	6.4	.25	0.00
Employees keep on	6.6	.26	0.00
Productivity of your employees	5.8	.22	0.00
Return on Investment	4.9	.19	0.00
Profitability	4.7	.18	0.00
Revenue growth	4.7	.18	0.00
Cost reduction	5.2	.20	0.00
Exportation	4.7	.15	0.00

N = 6525

**Table 6. K-S One-Sample Test – Impact of the ICT**

	<b>K-S</b>	<b>Deviation</b>	<b>Sig. (2 tailed)</b>
Reduce transaction costs	5.5	.21	0.00
Improve quality of product/service	4.6	.18	0.00
Reach new suppliers	5.2	.20	0.00
Reach new customers	4.6	.18	0.00
Defend your self against competitors engaging in e-commerce	5.0	.19	0.00
Work with large firms (local and international)	5.2	.20	0.00
Increase market share	5.7	.22	0.00
Enter new markets	5.0	.19	0.00
Increase the flexibility of your firm	5.8	.22	0.00
Increase your ability to innovate	5.3	.20	0.00
Improve control of your business process organization	5.8	.23	0.00
Increase job creation in your firm	6.2	.24	0.00
Improve the image of your firm	5.0	.19	0.00
Contribute to solving your problem of lack resources and access to technology	5.8	.22	0.00

N = 652

## Appendix I -4

### Runs Test

The Runs Test procedure tests whether the order of occurrence of two values of a variable is random. A run is a sequence of like observations. A sample with too many or too few runs suggests that the sample is not random.

**Table 1. Runs Test – Factor Conditions**

	<b>Number of Runs</b>	<b>Z</b>	<b>Sig. (2 tailed)</b>
Acquiring capital	143	-8.5	0.00
Acquiring information	142	-8.3	0.00
Political and economic uncertainties	181	-11.4	0.00
Bureaucratic rules and regulations	129	-15.34	0.00
Infrastructure availability	169	-9.4	0.00
Infrastructure cost	208	-7.2	0.00
Inconsistent raw material quality	166	-12.39	0.00
Technical qualifications	96	-15.5	0.00
The market accessibility	93	-3.6	0.00

N= 652, Test Value = 3

**Table 2. Runs Test – Demand Conditions**

	<b>Number of Runs</b>	<b>Z</b>	<b>Sig. (2 tailed)</b>
Local demand	91	-6.6	0.00
International demand	56	-18.8	0.00
Product image in the international markets	77	-6.6	0.00
Customer awareness with regard to product quality standards	117	-6.2	0.00
Sophisticated customers	83	-8.1	0.00

N= 652, Test Value = 3

**Table 3. Runs Test – Related and Supporting Industries**

	<b>Number of Runs</b>	<b>Z</b>	<b>Sig. (2 tailed)</b>
Supplier buyer relationships	132	-8.8	0.00
The relationship with local banks	61	-19.1	0.00
The relationship with insurance firms	145	-12.0	0.00
The relationship with research and training	107	-15.8	0.00
The relationship with local manufacturers	139	-8.4	0.00
The relationship with public institutes	174	-5.8	0.00
The relationship with governmental institutes	190	-9.8	0.00
The relationship with stone cutting firms	192	-6.6	0.00
The relationship with firms from other sectors	126	-14.1	0.00

N= 652, Test Value = 3

**Table 4. Runs Test – Five Forces**

	<b>Number of Runs</b>	<b>Z</b>	<b>Sig. (2 tailed)</b>
The intensity of rivals	198	-9.8	0.00
The power of buyers	218	-8.5	0.00
The power of suppliers	226	-7.3	0.00
The threat of substitutes	161	-12.2	0.00
The threat of new entry	212	-3.4	0.00

N= 652, Test Value = 3

**Table 5. Runs Test – Balanced Scored Card**

	<b>Number of Runs</b>	<b>Z</b>	<b>Sig. (2 tailed)</b>
Percentage of new products of total turnover	196	-8.0	0.00
Time necessary to develop new products	202	-9.3	0.00
Customer satisfaction	111	-2.1	0.00
Your market share	135	-4.8	0.00
Customer keep on	97	-3.3	0.00
Your employees satisfaction	81	-9.0	0.00
Employees keep on	77	-8.9	0.00
Productivity of your employees	109	6.1	0.00
Return on Investment	149	-5.9	0.00
Profitability	168	-7.2	0.00
Revenue growth	202	-6.4	0.00
Cost reduction	230	-7.3	0.00
Exportation	196	-7.8	0.00

N= 652, Test Value = 3

**Table 6. Runs Test – Impact of the ICT**

	<b>Number of Runs</b>	<b>Z</b>	<b>Sig. (2 tailed)</b>
Reduce transaction costs	207	-7.9	0.00
Improve quality of product/service	196	-8.0	0.00
Reach new suppliers	168	-10.3	0.00
Reach new customers	160	-11.0	0.00
Defend your self against competitors	195	-7.9	0.00
Work with large firms (local and international)	179	-9.9	0.00
Increase market share	177	-10.1	0.00
Enter new markets	181	-9.6	0.00
Increase the flexibility of your firm	181	-7.4	0.00
Increase your ability to innovate	188	-7.2	0.00
Improve control of business process	196	-6.0	0.00
Increase job creation in your firm	168	-7.5	0.00
Improve the image of your firm	176	-9.4	0.00
Contribute to solving lack resources	191	-7.5	0.00

N= 652, Test Value = 3

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## GLOSSARY

**Analyzing Qualitative Data:** qualitative data are based on meanings expressed through words. They result in the collection of non-standardized data which require classification and are analyzed through the use of conceptualization. The process of qualitative analysis involves the development of data categories, allocating units of original data to appropriate categories, recognizing relationships within and between categories of data, and developing and testing hypotheses to produce well-grounded conclusions. The analysis may involve interview and observation.

**Analyzing Quantitative Data:** data for quantitative analysis can be collected and subsequently coded at different levels of numerical measurement. Analysis will involve describing data and exploring relationships using statistics. The analysis may involve using statistics such as: the mean, the chi square, t-test, and ANOVA.

**Balance Scored Card:** a framework for setting and monitoring business performance. Metrics are structured according to customer issues, internal efficiency measures, financial measures and innovation.

**Bologna Charter on SME Policies:** Ministers and representatives of many governments were participating in the Bologna Conference. They are recognizing the increasing importance of small and medium-sized enterprises (SMEs) in economic growth, job creation, regional and local development, and social cohesion, also through the role played by women and young entrepreneurs. Also, they are recognizing the globalization, the acceleration of technological change and innovation create opportunities for SMEs but also involve transition costs and new challenges and that globalization should lead to higher living standards for all and that its benefits should be accessible to all on an equitable basis.

**Business Competitiveness Index:** is a complement to the medium-term, macroeconomic approach of the Growth Competitiveness Index. It evaluates the underlying

microeconomic conditions defining the current sustainable level of productivity in each country.

**Business Environment:** can be understood in terms of four interrelated areas: the quality of factor conditions, the context for firm strategy and rivalry, the quality of local demand conditions, and the presence of related and supporting industries.

**Business Model:** a summary of how a company will generate revenue identifying its product offering, value added services, revenue sources and target customers.

**Business to Business:** commercial transactions are between an organization and other organizations.

**Business to Customer:** commercial transactions are between an organization and consumers.

**Cluster:** geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition.”

**Competitive Advantage:** a firm experiences a competitive advantage when its actions in an industry create economic value and when few competing firms are engaging in similar actions. However, optimizing short-term profitability does not necessarily ensure optimal shareholders returns since shareholder value represents the net present value of expected future earnings. This research used the concept of the balanced scored card (BSC) as an indicator for the firm’s competitive advantage.

**Competitiveness at the Firm Level:** is the ability to provide products and services more effectively and efficiently than relevant competitors. This includes a sustained success in the international markets without protection or subsidies. Measures of the competitiveness at the firm level include firm profitability, measures of cost and quality, exports, and market share.

**Competitiveness at the Industry Level:** is the ability of the nation's firms to achieve sustained success versus foreign competitors without protection or subsidies. Measures of the competitiveness at the industry level include the overall profitability of the nation's firms in the industrial sector, the industry's trade balance, the balance of outbound and inbound foreign direct investment, and the direct measures of cost and quality at industry level.

**Competitiveness at the National Level:** the citizens' ability to achieve a high and constantly rising standard of living. A high and rising standard of living for all nationals can be sustained only by the continuous improvement of productivity.

**Competitive Factors:** it discusses the competitive factors considered by Porter (1979, 1980, 1985, 1990). In particular, it discusses the factor conditions, demand conditions, related and supporting industries and Porter's five competitive forces.

**Competitiveness Team:** The team was established as a research-oriented unit at the Ministry of Planning and International Cooperation (MoPIC) in 1997 as part of a regional project funded by the Dutch Government. The team began with an initial mandate of creating a micro-level database of Jordanian industry through studying various economic activities and clusters. In January 1998, the United States Agency for International Development (USAID) took over funding of the project until December 31, 2000. Since that date, the team has been involved in assessing, evaluating and improving the competitiveness of various industries and economic clusters in Jordan. USAID funding has twice been extended for JNCT up until June 2005.

**Confirmatory Factor Analysis:** seeks to determine if the number of factors and the loadings of measured (indicator) variables on them conform to what is expected on the basis of pre-established theory. The indicator variables are selected on the basis of prior theory, and the factor analysis is used to see if they load as predicted on the expected number of factors

**Cross-Sectional Study:** the study of a particular phenomenon at a particular time.

**Demand Conditions:** nations gain competitive advantage in industries where sophisticated and demanding buyers put pressure on firms to innovate faster than their foreign competitors. Thus, it is the characters of the home demand, not its size that is likely to be more critical

**Descriptive Study:** the objective of descriptive research is to portray an accurate profile of persons, events or situations.

**Dimension Stone:** natural rock material quarried for the purpose of obtaining blocks or slabs that meet specifications as to size (width, length, and thickness) and shape. The principle rock types are granite, limestone, marble sandstone and slate.

**Disintermediation:** the removal of intermediaries such as distributors or brokers that formerly linked a company to its customers.

**Dynamism:** represents system change. Key aspect of dynamism are how much change can occur, how much is known before the change, and both where and how the change is controlled.

**E-business:** all electronically mediated information exchanges, both within an organization and with external stakeholders supporting the range of business processes.

**E-commerce:** all electronically mediated information exchanges between an organization and its external stakeholders.

**E-government:** the use of Internet technologies to provide government services to citizens.

**E-procurement:** the electronic integration and management of all procurement activities including purchase request, authorization, ordering, delivery and payment between a purchaser and a supplier.

**Explanatory Study:** studies which establish causal relationships between variables may be termed explanatory studies. The emphasis here is on studying a situation or a problem in order to explain the relationships between variables.

**Exploratory Study:** are a valuable means of finding out what is happening to seek new insights. It is a particularly useful approach if we wish to clarify our understanding of a problem.

**Factor Conditions:** refer to the factors of production, such as skilled labor, land, natural resources, infrastructure, and capital necessary to compete within a given industry. These factors can be classified into basic factors and advanced factors as generalized and specialized factors. The most significant and sustainable competitive advantages are attained when a nation possesses advanced and specialized factors. Moreover, when firms face selective disadvantages, they must innovate and upgrade to compete in order to gain a competitive advantage over their rivals.

**Factor-Driven Stage:** is characterized either by natural-resource-based activities (primary extraction) or by labor-intensive manufacturing.

**Five Competitive Forces:** these competitive forces are the entry of new competitors, the threat of substitutes, the bargaining power of buyers, the bargaining power of suppliers, and the rivalry among the existing competitors.

**Generalisability:** the extent to which the research results are generalisable, that is the findings may be equally applicable to other research settings, such as other organizations.

**Generic Strategies:** the three generic strategies firms can possess: the cost leadership, differentiation and focus.

**Growth Competitiveness Index:** is composed of three components: the quality of the macroeconomic environment, the state of country's public institutions, and, given the increasing the importance of technology in the development process, a country's technological readiness.

**Hypothesis:** a testable proposition about the relationship between two or more events or concepts.

**Individual Relationship:** the individual relationships have been determined in the research as the relation of the SME working in the natural stone sector with the banks, insurance firms, universities, public institutes, other stone cutting firms, firms from other sectors, and with suppliers.

**Innovation-Driven Stage:** arrives when a country is human-capital abundant and active in research and development.

**Internet:** the Internet refers to the physical network that links computers across the globe. It consists of the infrastructure of network servers and communication links between them that are used to hold and transport information between the client OCs and web servers.

**Investment-Driven Stage:** is associated with the manufacturing of intermediate and capital goods and infrastructural building.

**Kruskal-Wallis Test:** is the non-parametric alternative to a one-way between-groups analysis of variance. It allows comparing the scores on some continuous variables for three or more groups. Scores are converted to ranks and the mean rank for each group is compared

**Levene Test:** to test if k samples have equal variances. Equal variances across samples are called homogeneity of variance.

**Mann-Whitney Test:** non-parametric alternative to the t-test for independent samples. Instead of comparing means of the two groups as in the case of the t-test, the Mann-Whitney Test compares medians. It converts the scores on the continuous variable to ranks, across the two groups. Then it evaluates whether the ranks for the two groups differ significantly.

**Multi-Method Approach:** combining quantitative and qualitative methods and to use primary and secondary data. There are two major advantages to employing multi-methods in the same study. First, different methods can be used for different purposes in a study. The second advantage is that it enables triangulation to take place. Triangulation refers to the use of different data collection methods within one study in order to ensure that the data are telling what we think they are telling us.

**Natural Stone Sector:** is a general term employed to cover all types of rock of whatever origin found in the earth's crust (Stone 2003). The materials in the natural stone sector could be classified in four categories: Marble, colored natural stones, travertine and onyxes, and hard stones.

**Positioning:** influencing the customer's perception of a product within a marketplace.

**Primary Activities:** are those involved in the ongoing production, marketing, delivery, and servicing of the product.

**Qualifying Industrial Zones (QIZs):** under a trade agreement with the USA, products manufactured in a QIZ can be imported to the USA free of duty and tax. To qualify for QIZ status, all products are reviewed by a committee of Jordanian and Israeli advisors, in collaboration with a US representative. The committee seeks to establish that at least 35% of the product's value has been contributed by a QIZ-based manufacturer. Material sourced from Israel and the Palestinian territories can also count toward this calculation. Once a product is granted QIZ approval, the manufacturer's export earnings are free of income and social services taxes. The enterprise can also enjoy duty-free importation of raw materials, fixed assets and spare parts. There are currently six QIZs in the country, the largest of which is in Irbid.

**REACH Initiative:** Regulatory Framework, Enabling Environment and Infrastructure, Advancement of National IT Programs, Capital and Finance, and Human Resource Development

**Reintermediation:** the creation of new intermediaries between customers and suppliers providing services such as supplier search and product evaluation.

**Related and Supporting Industries:** industries, especially those providing specialized inputs, machinery and services, are sources of technology, ideas and skilled human resources. Suppliers and end-users located in close proximity benefit from shorter lines of communication, a quick and constant flow of information, and an ongoing exchange of ideas and know-how. Social capital is an essential part of the glue that holds clusters together. The existence of the social capital depends on the ability of the people to associate with each other

**Reliability:** can be addressed by posing the following two questions:

- Will the measure yield the same results on different occasions? (deductive approach)
- Will similar observations be made by different researches on different occasions ?(inductive approach)

**Semi-Structured Interviews:** are non-standardized. The researcher will have a list of themes and questions to be covered although these may vary from interview to interview.

**SPSS:** is a software package used for conducting statistical analyses, manipulating data, and generating tables and graphs that summarize data. Statistical analyses range from basic descriptive statistics, such as averages and frequencies, to advanced inferential statistics, such as regression models, analysis of variance, and factor analysis. SPSS also contains several tools for manipulating data, including functions for recoding data and computing new variables as well as merging and aggregating datasets. SPSS also has a number of ways to summarize and display data in the form of tables and graphs.

**Strategy:** definition of the future direction and actions of a company defined as approaches to achieve specific objectives.

**Structured Interviews:** using questionnaires based on a predetermined and standardized or identical set of questions.

**Support Activities:** are those that provide purchased inputs, technology, human resources or the overall infrastructure functions supporting the other activities

**Tukey Test:** this procedure is based on the studentized distribution, using critical values  $q$ . Like the F distribution, the  $q$  distribution is characterized by two parameters that specify which particular distribution applies.

**Types of Businesses:** under the Companies Law in Jordan, businesses can be in the form of joint ventures, partnerships, limited liability companies, public shareholding companies, offshore companies and branch offices. All applications to register a new business must be submitted to the Controller of Companies, which operates under the supervision of the Ministry of Industry and Trade.

**Validity:** is concerned with whether the findings are really about what they appear to be about.

**Value Chain:** a model for analysis of how supply chain activities can add value to products and services delivered to the customer.

## **Het competitieve voordeel van kleine en middelgrote ondernemingen: een case studie naar de Jordaanse natuursteen industrie**

Dit proefschrift bestudeert de manier waarop kleine en middelgrote ondernemingen die werkzaam zijn in de verwerking van natuursteen in Jordanië zich opwaarderen van de fase van comparatief voordeel gebaseerd op absolute kostenvoordelen in de richting van meer dynamische, innovatie gebaseerde voordelen. De studie bekijkt met name hoe sterk ontwikkeld de factorbeschikbaarheid voorwaarden, de vraag, de invloed van gerelateerde en toeleverende industrieën waren, en andere factoren waarmee Jordanië in vergelijking met Turkije en Italië, geconfronteerd werd. Daarenboven, analyseert de studie de invloed van generieke strategieën en de invloed van informatie en communicatie technologie (ICT) op de concurrentiekracht van kleine en middelgrote bedrijven (MKBs).

Een gedetailleerde analyse van de data toont aan dat de Jordaanse MKBs achterliggen ten opzichte van hun Turkse en Italiaanse evenpartners in termen van zowel kennis, scholingsniveau als de noodzakelijke kapitaalinvesteringen om gemakkelijk toegang te krijgen tot, en voordeel te halen, uit moderne technologie en in het bijzonder ICT. De drie landen verschillen ook in belangrijke mate van elkaar in factorbeschikbaarheden, vraagvoorwaarden en de aanwezigheid van toeleverende industrieën. De uitgesproken voorkeur voor individuele relaties vormt niet de hoofdreden dat de meeste MKBs in Jordanië éénmans- of partnerbedrijven blijven en zich niet als onderneming ontwikkelen. De belangrijkste reden moet gevonden worden in de regels en administratieve lasten die gepaard gaan met het vormen van ondernemingen in Jordanië zoals eigendomsrechten, de bescherming van investeerders en het starten en sluiten van bedrijven in interactie met de specifieke Jordaanse culturele achtergrond.

Gebaseerd op een analyse van de sterktes, zwaktes, opportuniteiten en bedreigingen van de MKBs die actief waren in de natuursteen industrie in Jordanië worden een aantal aanbevelingen geformuleerd. Deze zestal aanbevelingen bevatten ondermeer: het actualiseren en vereenvoudigen van wetten en regelgeving; de opwaardering van de

noodzakelijke gespecialiseerde infrastructuur; de promotie van ondernemingsschap en de opwaardering van personeel; de oprichting van kredietinstellingen ter ondersteuning van het MKB; de promotie van ICT in de natuursteen industrie; en de uitbouw van een dynamische industriële cluster. Deze doelen kunnen op drie niveaus gerealiseerd worden: op het niveau van het MKB, op het niveau van de natuursteen industrie en de ondersteunende sectoren; alsmede op het niveau van de overheid.

Samen met macro-economische beleidsmaatregelen, zou een geconcentreerd beleid in de richting van de MKBs in Jordanië gevoerd moeten worden. De resultaten van de studie tonen een aantal belangrijke tekortkomingen en onvolmaaktheden aan in relatie tot de eigenaars van MKBs en individuele bedrijven die moeten geholpen worden wil men het potentieel van deze belangrijke steunpilaar van de Jordaanse economie volledig benutten. Private instellingen, en in het bijzonder bedrijfs- en managementscholen alsmede ontwikkelingscentra zouden op dit gebied adviesfuncties moeten verrichten. Maar dit vereist dat MKB eigenaars, en individuele ondernemers meer algemeen, ook hulp willen zoeken. Jammer genoeg, zoeken weinigen van hen deze hulp in een actieve kennisondersteuning van hun activiteiten. Hiervoor zijn verschillende redenen. De belangrijkste is het lage onderwijs- en scholingsniveau en het gebrek aan een modern bedrijfsperspectief aan hun kant. Het is dan ook noodzakelijk dat een extensief trainingsprogramma ontwikkeld en uitgevoerd wordt voor zowel de huidige actieve ondernemers als voor potentiële ondernemers. De curricula van deze opleidingen zouden zo ontwikkeld moeten worden dat zij passen bij de specifieke behoeften van de Jordaanse bedrijfseigenaars en managers.

Er is ook een dringende noodzaak de Jordaanse bedrijfsleiders en managers te wijzen op het belang van ICT voor een moderne bedrijfsvoering en de rol van de computer in het vereenvoudigen en het gemakkelijker en transparanter maken van bedrijfstransacties alsmede het verbeteren van communicatie. Bedrijfseigenaars die hun bedrijf overdragen aan andere familieleden zouden verzocht moeten worden de nieuwe eigenaars voor te bereiden voor de job van bedrijfsleider aan de hand van een gepaste training. Als dat niet mogelijk is, zouden zij moeten aangespoord worden om professionele hulp te zoeken van lokale experts en adviseurs.

Voorgesteld wordt dat de natuursteen industrie zich verder als een moderne kennis cluster ontwikkeld in Jordanië. Het bestuur van deze cluster zou dan geleid kunnen worden door de verantwoordelijke ministeries en autoriteiten die in een consensus mode met betrokken kennispartijen (professionele organisaties, onderwijs- en traininginstellingen, technische en financiële ondersteunende organisaties) tot een gemeenschappelijke prioritering van beleid en uitvoering zouden kunnen komen. Het bestuur zou verantwoordelijk zijn voor het uitzetten van de brede strategische richtingen en het evalueren van de prestaties van het management. Het management zou dan verantwoordelijk zijn voor het bewerkstelligen van de productiviteit in de sector, innovatie en het behouden van voldoende concurrentie tussen de verschillende participanten, b.v. aan de hand van kostenreducties van gemeenschappelijke input factoren, het ontwikkelen van een kritische massa door het ontwikkelen en ter beschikking hebben van een gemeenschappelijke pool van gespecialiseerde kennis en scholing, expertise en producten met toegevoegde. De cluster zal de economische funderingen van de Jordaanse natuursteen industrie kunnen versterken aan de hand van een beter geschoolde arbeidskracht, een sterkere onderzoek- en ontwikkelingscapaciteit en betere infrastructuur, en nieuwe sociale kapitaal assets creëren zoals daar zijn: vertrouwen, synergie, samenwerking, die allemaal essentieel zijn voor het verbeteren van het concurrentievermogen van de sector.

## **CURRICULUM VITAE**

Suhail Sami Sultan was born in 1972 in Hebron, Palestine. In 1995, he received a Bachelor of Science degree in Industrial Engineering from the University of Jordan. In 1997, he graduated from Maastricht School of Management, Netherlands with a master degree in Business Administration. His master thesis focused on the competitiveness of the SMEs working in Palestine. Between 1997 and 2001, he worked as a lecturer at Palestine Polytechnic University in addition to his work as a management consultant with many international organizations. In 2001, he started his Ph.D. at Maastricht School of Management in collaboration with the United Nations University- Maastricht Economic and Social Research and Training Centre on Innovation and Technology (UNU-MERIT) which is based at the Economics Faculty of Maastricht University, Netherlands. In 2002, he received a Master of Philosophy degree from Maastricht School of Management. Between 2002 and 2004 he worked as a head of the Administrative Sciences Department at Palestine Polytechnic University. From August 2005 until September 2006, he was running a World Bank and EU project hosted by the Ministry of Education and Higher Education in Palestine. This project aimed at improving the quality and innovation at the tertiary education institutes in Palestine. Since September 2006, he has joined Palestine Polytechnic University as a director of Planning and Development as well he is running a small management consulting firm in Palestine.