Competitiveness of the Palestinian stone and marble sector through clustering

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Abstract

Palestine is known as “The Holy Land”. It's numerous features are unique and have made it a significant destination for tourists from all over the world. Palestine also has lots of natural resources especially natural stone. Working in a cluster is an efficient and effective way to enhance the competitiveness of natural stone firms. Firms in the cluster area have greater ability to access larger local markets, and they are encouraged to be more innovative because there is rivalry amongst firms in the cluster. Although firms working in the stone and marble sector in Palestine are exporting to many countries worldwide, they still tend to underperform.

A combination of quantitative and qualitative methods- mixed methodology- was used in this research. The researcher randomly selected and distributed 100 questionnaires (to the companies working in the stone and marble sector. The questionnaire was addressed to the owner/manager of the firms that were selected. The results of the research show that the Palestinian stone cluster sector is weak and the performance of stone firms working within the cluster is very low. Additionally, the results show a positive and strong relationship between working in a cluster and enhanced competitiveness achieved through this technique. Working in a cluster has been shown to 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 also 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 and business sustainability.

Keywords: competitiveness, cluster, stone and marble sector

Introduction

As a location central to the beliefs of Christianity, Islam and Judaism, the Holy Land has long been the destination of pilgrims the World over. Each city of the Holy land has its own flavor, its own identity: from the walled Old City of Jerusalem, its venerated holy sites the scene of divine messages and miracles, betrayal, battle, and conquest, to Bethlehem and its biblical significance as the birthplace of Jesus Christ (pbuh), to ancient Jericho the oldest town in the whole World. There is perhaps no city in the world as fascinating as Jerusalem which has witnessed and played host to the events that have shaped the world in which we live. Palestine has a lot of historical and religious places of note. The reason for this is the fact that Palestine is known to be “The Holy Land”. Without doubt, the numerous features of the place are unique and have made it a significant destination for tourists from all over the world. At the same time, Palestine has many natural resources, especially natural stone. In the past years, Palestine appealed to many of pilgrims, due to the diversity of believers in this area. On the other hand, they demonstrated that this
unique area will back up the Palestinian economy as it is economically supported by having tourism accommodation, transportations, facilities and wide range of related services. Due to availability of attraction elements in Palestine, the area can play a major role in tourism and make it even more unique.

Previously the inhabitants of this area benefited from the natural stone by building structures such as the Dome of the Rock, the Al Aqsa Mosque, the Western wall, and the Church of Holy Sepulchre in Jerusalem, the Church of the Nativity, the Tombs of Rachel in Bethlehem and Abraham’s Mosque in Hebron. Recently, the Palestinians started to pay more attention to this important sector which could play a significant role in building the economy of Palestine.

Industrial production in Palestine has improved greatly in the last decade especially when considering quality issues. In this sector the percentage of the sector contribution in total Gross Domestic Product (GDP) has risen dramatically from 8% in the mid-eighties to 11.4% of GDP by 2013 (PCBS, 2014). There were some 16,263 registered manufacturing establishments in 2012. Small, owner-operated enterprises characterize the manufacturing sector. Only 0.5% of enterprises employ more than 50 workers; while nearly 78% employ less than five. Moreover, the industrial sector (mining, manufacturing and utilities) has employed around 78,724 workers in 2012 (an average of 11.8 % of the total work force). Manufacturing production is concentrated in a limited range of traditional manufacturing activities. Production of non-metallic mineral products accounts for 18.9% of employment and 13% of all establishments, followed by the food and beverages subsector accounting for another 17.3% of employment and 14.3% of establishments, and production of apparel and leather goods account for 15.1% of total employment and 12.3% of all industrial establishments. Other activities with some weight in the industrial sector are furniture, manufactured metal products, mostly catering to the construction industry, as well as rubber and plastic products. There is still limited development of high value added and high technology production (PCBS, 2014).

The contribution of the construction sector to the GDP is currently rising in real terms and as a percentage of the total labor force. This sector is also important for growth as it carries significant forward and backward linkages, ranging from simple manufacturing plants to major construction materials production and processing industries such as the stone and marble industry. The stone and marble industry is considered to be the biggest industry in terms of number of firms, sales volume, employment rate and total investment.

According to the Union of Stone and Marble (USM) there are 1,650 companies involved in this industry including cutting factories, quarries, crushers, and workshops. 658 of these companies are located in Hebron and Bethlehem, which are the two main industrial stone and marble centers in Palestine. Although it is a usually an automated industry, the stone and marble industry is one of the largest employer of labor force in Palestine with about 8,500 (approximately 14% of total workforce) workers employed in this sector (USM, 2014).

Working in a cluster is an efficient and effective way to enhance the competitiveness of firms working in the stone and marble sector. Firms in the cluster have greater ability to access larger local markets, and they are encouraged to be more innovative.
because there are rivalries amongst firms in the cluster (Porter, 1990). This article aims to map the existing cluster in the stone and marble sector as a tool to improve its competitiveness.

**Stone and marble sector in Palestine**

Stone and marble industry is one of the most important productive sectors in Palestine and has historically played a prominent role in its economy. Palestine is the twelfth-largest producer of stone and marble in the world. It produces 22 million square meters of goods annually (from 100 million tons of raw stone) and the labor productivity in the sector is almost five times that of other sectors (USM, 2014) (USAID, 2006). The seven main categories of the products in Palestine are: slabs, tiles, building stones, headstones, decorative products, kitchen and counter tops, and blocks.

The stone and marble sector is responsible for 25% of Palestine’s industrial revenue, 4.5 % of gross national product (GNP), and 5.5 % of GDP. Its output contributes to 4% of world output by volume and 2% of world output by value. Moreover, the sector is responsible for 26% of Palestinian exports and products are sold in 56 countries (PNES, 2014). Sales are valued at between USD 417 million and USD 440 million (table 1).

### Table 1. Key Economic Data, Palestinian Stone and Marble Sector 2010

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current reserves</td>
<td>$ 30 billion</td>
</tr>
<tr>
<td>Industrial revenue</td>
<td>25 %</td>
</tr>
<tr>
<td>Contribution to GNP</td>
<td>4.5 %</td>
</tr>
<tr>
<td>Contribution to GDP</td>
<td>5.5 %</td>
</tr>
<tr>
<td>Contribution to global output</td>
<td>4 % by volume, 2 % by value</td>
</tr>
<tr>
<td>Total annual sales</td>
<td>US $ 417 million to US $ 440 million</td>
</tr>
<tr>
<td>Exports / domestic sales split</td>
<td>4 % / 96 %</td>
</tr>
<tr>
<td>Annual sector exports</td>
<td>$ 60 million</td>
</tr>
<tr>
<td>Contribution to Palestinian exports</td>
<td>26 %</td>
</tr>
<tr>
<td>Number of export destinations</td>
<td>56 countries</td>
</tr>
<tr>
<td>Main importer</td>
<td>Israel ( 71 % )</td>
</tr>
</tbody>
</table>

Source: USM, 2014

The marketing mix is shifting towards export in the last 7-8 years. In 2011, total exports of the sector amounted to USD 130.7 million. Sector exports have been growing at a rate of 13% (in absolute values) between 2007 and 2011, slightly lower than the global growth rate of consumption. The composition of the market is classified as: 65% Israel, 25% local market in West Bank and 10% for export (USM, 2014). The marketing of these products depend highly on the design specification done by engineering offices. So, networking with engineers and contractors is vital for the survival and growth of these companies. The stone manufacturers are categorized as small, medium and large scale size producers. Workshops are another category of buying slabs and cutting it into small size pieces. The two main industrial centers of the stone and
The marble industry in the West Bank is concentrated in Hebron and Bethlehem, where most of the big factories and quarries are located. The following table illustrates the distribution of Palestinian stone and marble factories, workshops and quarries (table 2).

Table 2. Number of Stone Firms

<table>
<thead>
<tr>
<th>Type of entities</th>
<th>Quarries</th>
<th>Cutting factories</th>
<th>workshops</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>300</td>
<td>750</td>
<td>600</td>
</tr>
</tbody>
</table>

Source: USM, 2014

The industry is a major source of employment in the West Bank. According to the USM (2014), this industry provides jobs to more than 15,000 workers and employees, while official statistics place the figure at just over 10,000 (official statistics do not include informal workers). The industry’s workers can be classified into three categories (administrative, skilled and unskilled workers). The annual average wage is approximately USD 6000 per year for unskilled workers, the highest wage paid to unskilled laborers in any major industry in Palestine. More than 99% of workers in the sector are males.

The sector’s major competitive advantage is its dependency on local raw materials from the Holy Land. Quality is an important issue in selecting the materials and in the surface finish of the final product resulting from proper manufacturing practices. The basic competitive features of the products are color and texture. Quality and price are interchangeable factors in the sector. More quality means more costs in the manufacturing and supply chain.

Technologically speaking, the sector has an easy access to the most updated and advanced technologies in the international market. Few of the manufacturers develop and upgrade their machinery regularly. There are substantial differences in operating the machines and in the process orders and scheduling. The technology used in this sector is mostly semi-automatic, with some automatic equipment. Italian machinery has been the traditional preference for Palestinian enterprises; however, firms are increasingly turning to relatively less expensive equipment from Turkey and, to a lesser extent, China. It is estimated that about 85% of production is semi-automatic, while the remaining 15% is fully automated. Therefore, the Palestinian stone and marble industry is highly automated in certain functional areas but still considered a labor-intensive industry. Maintenance is another problem affecting the continuity of operations (PFI, 2013).

Competition among local producers is severe, whereas competition with imported products in the local market is weak. The sector has thus far been able to compete on both price and quality, competition in international markets is increasing. In the Arab market, Palestinian enterprises face competition from Indian, Iranian and Turkish marble; in Europe they compete with Italian and French marble; and in North America they compete with Brazilian, Mexican, and Argentinean marble. Moreover, there is ever-increasing competition from low cost producers from countries such as China, Jordan, India, and Turkey. Despite this, there is much room for increased market penetration in areas where preferences conform to Palestinian materials These markets include the United States, Europe, the...
Far East, Australia and the Persian Gulf. The main competitors in most major markets are Turkey, China, Iran, Egypt, India, and Brazil, despite the lack of more precise data for each market. Enterprises in the sector are primarily family-owned SMEs. The management structure is such that the employees start work in the business at an early age and gain experience in the existing tools and processes employed in the firm. The management structure is largely marked by low skills levels, and a low awareness on best practices in the sector. Management information systems and computer applications are also needed. Motion and transportation problems are encountered especially with those products sold in the Israeli market. Redesigning and restructuring work inside the firms will enhance their productivity and reduce operation costs. Linking the industry to relevant stakeholders; academic institutions, professional associations and the like will enhance its strength. This industry is represented by a well-organized federation that still needs further capacity building to serve better its membership (USM, 2014).

Cluster and Competitiveness

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 small firms should be based on a small-projects base. Ramsden and Bennett (2005) provide a better understanding to the form of intangible benefits that businesses receive from advice.

Clusters, unlike networks, are not based on membership. They are simply geographic concentrations of interrelated companies and institutions of sufficient scale to generate externalities. The minimum number of firms with common or overlapping needs to be acknowledged as a “cluster” is the number that attracts suppliers and specialized services and resources. (Rosenfeld, 2005). In practice, clusters are taken to mean a group of business enterprises and non-business organizations for whom membership within the group is an important element of each member firm’s individual competitiveness. Binding the cluster together are ‘buyer-supplier relationships, or common technologies, common buyers or distribution channels, or common labor pools’ (Enright 1997). It is also important to note that clusters involve a certain degree of spatial proximity between its actors. Geographical proximity enables face-to-face networking, common labor markets and the diffusion of knowledge, especially ‘tacit’ knowledge which is difficult to codify. Clusters affect prosperity through their impact on productivity, innovation, and entrepreneurship. The positive impact of cluster strength on economic performance works through a number of distinct channels (Porter, 1998). This is important, because it suggests that locations facing challenges in these areas might be served particularly well by adopting a cluster perspective (Cortright 2006). Companies within clusters achieve higher levels of productivity (Venkataramanaiah, and Parashar 2007).

They can, because the presence of specialized suppliers and service providers reduces reaction times and the need to keep higher levels of working capital. They must, because the competition for inputs drives up costs and the competition on the end market enforces a constant focus on efficiency improvements and the
adoption of best practices. The effect of higher competition is felt not only by companies but also by employees that are seen to work longer hours in strong clusters.

Companies within clusters reach higher levels of innovation. The cluster environment creates stronger pressure to innovate, a richer source of relevant ideas, and lower costs of turning ideas into new products and services. In a dynamic sense, this will also increase the incentives of companies to invest in innovative capacity, giving a further boost to innovation. Importantly, there is emerging evidence that the impact of clusters is particularly strong on the commercial use of knowledge, not just the creation of knowledge. Clusters finally provide a beneficial environment for entrepreneurship. New companies are more reliant on external assets and capabilities than incumbents. This leads to higher levels of entry in cluster environments. More importantly, new studies also indicate that survival rates and firm growth are higher in strong clusters as well. These findings suggest that cluster policies could be more effective than traditional entrepreneurship policies that have tended to create new companies but failed to trigger their growth into larger businesses.

Method

A combination of quantitative and qualitative methods is used. Employing both qualitative and quantitative data offers an opportunity to probe deeply into the issues raised by the research questions (Sekran and Bougie 2010). 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 (Labaw 1980).

Semi-structured interview with representatives of the Union of Stone and Marble and company owners was used as a qualitative tool. The researcher randomly selected and distributed 100 questionnaires (at 90% confidence level and 5% margin of error) to the companies working in stone and marble sector. The questionnaire was addressed to the owner/manager of these firms. The purpose of the survey is descriptive-exploratory with some explanatory analysis. The questionnaire consists of three parts: Part one covers the different elements of the related and supporting industries. Part two covers the firms' performance, and part three covers the demographic data. The scale items were tested on the reliability and validity of the final test to examine the consistency of the constructs and related items. The respondents were asked about their competitiveness by asking about the Balanced Scorecard (innovation, customer's satisfaction, internal business and financial performance) of their firms as an indication of their competitiveness. It was measured with a five-point scale (very negative to very positive). Furthermore, the respondents were asked to evaluate the different elements of the related and supporting industries. These elements were also measured with a five-point scale (1 = very negative and 5 = very positive).

Results

In Palestinian stone and marble sector there are weak clustering and weak involvement of local actors, lack of a strong vision shared among the various actors, and low commitment from the government. As shown in table (3), all means are relatively low which proves that the cluster is still immature and underdeveloped. The results show that stone and marble firms have relatively weak relations.
with banks, insurance firms, research centers and universities, local manufacturers, public institutes, government, firms working in the same sector, firms working in other sectors, and supplier-b buyer relations.

Table 3. Related and Supporting Industries- Average Mean

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Supplier-buyer relations</td>
<td>1.25</td>
</tr>
<tr>
<td>2</td>
<td>Relation with banks</td>
<td>1.5</td>
</tr>
<tr>
<td>3</td>
<td>Relation with insurance firms</td>
<td>1.75</td>
</tr>
<tr>
<td>4</td>
<td>Relation with research centers and universities</td>
<td>2.0</td>
</tr>
<tr>
<td>5</td>
<td>Relation with local manufacturers</td>
<td>2.25</td>
</tr>
<tr>
<td>6</td>
<td>Relation with private sector institutes</td>
<td>2.75</td>
</tr>
<tr>
<td>7</td>
<td>Relation with government</td>
<td>3.00</td>
</tr>
<tr>
<td>8</td>
<td>Relation with firms working in the same sector</td>
<td>3.25</td>
</tr>
<tr>
<td>9</td>
<td>Relation with firms from other sectors</td>
<td>3.75</td>
</tr>
</tbody>
</table>

Table 4 presents results of the average mean of the four dimensions of the balanced scorecard. The results show that the firms working in the stone and marble enjoy low financial indicators, innovation, customer satisfaction and internal businesses and thus these firms enjoy low competitiveness. A correlation factor was calculated to measure the relationship between clustering and competitiveness. The factor is 0.78 which means that there is a positive relationship between them.

Table 4. Balanced Scorecard – Average Mean

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Percentage of new products of total turnover</td>
<td>1.25</td>
</tr>
<tr>
<td>2</td>
<td>Time necessary to develop new generation of products</td>
<td>1.5</td>
</tr>
<tr>
<td>3</td>
<td>Customer satisfaction</td>
<td>1.75</td>
</tr>
<tr>
<td>4</td>
<td>Market share</td>
<td>2.0</td>
</tr>
<tr>
<td>5</td>
<td>Customer loyalty</td>
<td>2.25</td>
</tr>
<tr>
<td>6</td>
<td>Employees satisfaction</td>
<td>2.5</td>
</tr>
<tr>
<td>7</td>
<td>Employees loyalty</td>
<td>2.75</td>
</tr>
<tr>
<td>8</td>
<td>Productivity of your employees</td>
<td>3.0</td>
</tr>
<tr>
<td>9</td>
<td>Return on Investment</td>
<td>3.25</td>
</tr>
<tr>
<td>10</td>
<td>Profitability</td>
<td>3.5</td>
</tr>
<tr>
<td>11</td>
<td>Revenue growth</td>
<td>3.5</td>
</tr>
<tr>
<td>12</td>
<td>Cost reduction</td>
<td>3.75</td>
</tr>
<tr>
<td>13</td>
<td>Exportation</td>
<td>4</td>
</tr>
</tbody>
</table>
The innovation performance is low in Palestine. In fact, the reconfiguration of any given industry or cluster is often a mark of the level of innovation within its component parts (Porter 1990). Elango (2008) explained how outsourcing can be used to facilitate strategic innovation. Adequate investment in this area is critical to all long-term success. To achieve that, there should be adequate investment in the human and infrastructure, and the government should start creating the environment necessary for innovation. Singh, Garg, and Deshmukh (2010) show that human resource development and quality improvement are highly correlated with SMEs competitiveness.

Customers’ satisfaction, retention ratio, and market share are also low in Palestine. The Palestinian firms working in the stone and marble sector lack the competitive elements such as cost reduction, or high quality. Thus, the firms’ owners/managers should use their networks to improve their business activities and use their marketing management competencies in order to develop innovative marketing (Gilmore 2011). As well, Palestinian firms have low financial performance. As a result of the limited market size, old machinery and production methods as well as employees’ low productivity, the cost per unit is high; this leads to a reduction in revenue, profit growth and exportation.

Developing stone and marble cluster

Porter (2000) explained how clusters affect competitiveness in three broad ways that both reflect and amplify the parts of the diamond: (a) increasing the current productivity of constituent firms or industries, (b) increasing the capacity of cluster participants for innovation and productivity growth, and (c) stimulating new business formation that supports innovation and expands the cluster. Many cluster advantages rest on external economies or spillovers across firms, industries, and institutions of various sorts. Each of the three broad influences of clusters depends, to some extent, on personal relationships, face-to-face communication, and networks of individuals and institutions that interact. Formal and informal organizing mechanisms and cultural norms often play a role in the functioning and development of clusters. In the proposed Stone and Marble Cluster Model (S&CM), the board is led by the Ministry of National Economy in a consensus framework with involved organizations (professional associations, educational-training, technical and financial support organizations and related ministries). The suggested Cluster (figure 1) should be an independent, non-profit and private membership based organization and consists of four basic units.

Figure 1. Suggested Stone and Marble Clustering Model

- Quarries, Stone Cutting Firms, Workshops
- Ministry of National Economy and other related Ministries
- Universities and R&D
- Banks, Insurance,
- Packaging Institutions
- Stone and Marble Centre
- Shipment and Logistical Institutions
- Maintenance and Technical Supporters
- Statistics Unit: The unit will assist in building the nucleus base for any study regarding the stone and marble industry in Palestine through analyzing the collected data.
- Academy: The academy provides education, research, training and quality control. The Stone and Marble Centre established in 2010 in Hebron through a partnership between Ministry of National Economy.
- Palestine Polytechnic University and Union of Stone and Marble should be the corner stone for such activities.
- Internationalization and Export Promotion Unit: This unit aims to remain exhibitions and fairs of locally manufactured products. This unit should be based at the Union of Stone and Marble.

Some of the entities mentioned in the clustering models are well developed such as banks and insurance while other entities still under development such as the maintenance and technical supporters; packaging institutions; and Research and Development (R&D) institutions.

Conclusion

The Palestinian stone and marble cluster is currently weak. There are weak networking linkages between firms working in the stone and marble sector and banks, universities, and other related and supporting industries. Even though, Palestinians stone firms export to many countries worldwide, these firms have low performance in terms of innovation, customer satisfaction, internal business and financial indicators.

The results of the research study show that there is a positive and strong relationship between working in clusters and enhanced performance. Thus the competitiveness of the firms could be further enhanced by building networks and closely working with the related and supporting industries stakeholders such as universities, architects, shippers, banks among others. The suggested cluster notion 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.

References


PFI, Palestine Federation of Industries (2011), the Current Status of Industrial Sector in Palestine.


USAID/ DAI (2006), THE PALESTINIAN STONE AND MARBLE CLUSTER - COMPETITIVENESS ASSESSMENT REPORT
USM (2014), Union of Stone and Marble, www.usm-pal.org


