ASSESSMENT OF THE IMPACT OF TECHNOLOGY MANAGEMENT PRACTICES ON THE COMPETITIVE ADVANTAGE OF KUWAITI TEXTILES, CLOTHING AND LEATHER INDUSTRIES

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Abstract- Technology has accelerated rapidly providing various opportunities for organizations to improve their efficiency, decrease their production time and sustain their competitive advantages. The decision makers try to apply the best practices in managing technology to assess their current operations and develop their strategies towards technology to compete in the market. This research aimed to assess the impact of technology management practices (TMPs) on the competitive advantage of Kuwaiti textiles, clothing and leather industries sector (TCLIS). The research relied on a designed questionnaire as a data collection tool. The sample included 16 companies from (TCLIS). The obtained data were analysed statistically by using SPSS and MS Excel. The results showed that the overall perceived level of TMPs was 73%. The scores of TMPs are presented in descending order as follows: technology exploitation 80%, technology identification 77.6%, technology selection 74%, technology protection 67.6% and technology acquisition 66%. The results showed that the companies have a good skill and experiences in identifying their technological needs and when they utilizing new technology, they focus more on quality improvement, decreasing time of production, optimizing manufacturing ability and increasing production accuracy. The results also showed that 75% of the companies don’t have research and development unit, they don’t allocate special percentage of the net profit for this unit and 53.7% of them prefer fully external acquisition. Also, the companies were asked about how they implement a value creating strategy to sustain competitive advantage through the following main factors: cost, quality and differentiation. The average level of competitive advantage was 82.7%. The results of their assessment for the factors in descending order as follow: cost 83.4%, quality 82.9% and differentiation 81.9%. The results revealed that there is a positive correlation between all TMPs. Also, there is a positive correlation between TMPs with competitive advantages elements: cost, quality, differentiation with coefficients of correlation 0.551, 0.525 and 0.598 respectively. This ensures that TMPs enhance the competitive advantage of the companies. The study recommends the companies to enhance the practicing of TMPs, establish and develop research and development units, allocate suitable budget to help them acquire their technology in effective way and develop clear mechanism to protect their technology.

Keywords- Technology Identification, Technology Selection, Technology Acquisition, Technology Exploitation, Technology Protection, Cost, Quality, Differentiation.

INTRODUCTION

The pace of change in technology has accelerated rapidly providing various opportunities to the organization to improve their efficiency and competitiveness. The developed countries pay attention to the technological development, and the developing countries in the process of direction toward these limits. It allows investing in traditional and non-traditional sectors and the application of new technologies on a wider range of economic activities. This means that it should strengthen the skills and technology at the same time in order to ensure the sustainability of productivity growth and development (Somafia and Salazar, 2008). Competitive advantage is one of the most important topics related to the business sectors within the dynamic world of competitions. According to (Qawasmeh and Bataineh, 2010), Porter (1985) said that competitive advantage was published in 1985, and it cannot be understood by looking at a firm as a whole. It stems from many unattached activities, as designing, producing, marketing, delivering and supporting the product. Each of these activities can participate to a firm’s relative cost position and create a foundation for differentiation. Javadi (2011) said that the subject of sustaining competitive advantage is one of the most concerns of companies in order to compete with rivals for attract new customers, in addition to keep the existence one. Kondo (2001) found that technology development changes market competition due the development of many factors as information technology, communication technology and transportation technology. Also technology development helps the firms to save the energy and resources through improvement of the products and quality. Bo Huntala (2008) added that technological development is one of the basic forces that shape the competitive environment, as it allows accelerating the growth of demand, increase the life cycle of the product and renewal the current product. Also, it helps in combining several functions for one product, creating the new sectors that offer new jobs, in addition to the impact on the cost structures and make them more dynamic. Also controls the entry barriers for destruction or construction market. Todeva and John (2001) noted that firms build competitive advantage beyond the core business activities and found relation with new market segment of global information sector. In addition, the strategic alliance and long term collaboration can be built by new
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competence building. Phaal, et al. (2001) said that technology management is the effective of identification, selection, acquisition, development, exploitation and protection of the technologies which include product, process and infrastructural that helps to protect both market position and business performance to accord the firm objectives. Krishnaiah and Rajashekar (2012) applied search on SMEs in India by selecting food processing enterprises as a sample. They found that technology management practices become more clear with the company development. Technology plays a key role in providing advanced development using technology acquisition, the effectiveness and efficiency. Technology Management practices are important in small and medium sized enterprises (SMEs) through all stages of the life of the enterprise. This study aims to assess the impact of technology management practices on the competitive advantage of Textiles, Clothing and Leather industries sector (TCLIS) in the state of Kuwait.

Research Model and Hypotheses

Fig (1) represents the research model and hypotheses. The research hypotheses are:

H1: There is a positive linear relationship between technology management practices and cost.

H2: There is a positive linear relationship between technology management practices and quality.

H3: There is a positive linear relationship between technology management practices and differentiation.

RESEARCH TOOL

The research questionnaire was designed and constructed as the main source of collecting data. It was designed based on some previous studies as: kuruppuarachchi and Perera (2010), Ismael (2012), Saleh (2009) and Perry (2012). The questionnaire is suitable for this study because all the companies were asked the same questions in the same circumstances.

Analysis of Technology Management Practices

Level of Technology Management Practices

The respondents are agreed on the level of technology management practices (TMPs) with a percentage of 73.04%. Fig (2) represents the results.

TECHNOLOGY IDENTIFICATION

Level of technology identification practice

The level of practicing technology identification at the companies under the study was measured; Fig (3) summarizes the results according to the descending order.

SOURCES OF TECHNOLOGY IDENTIFICATION

The companies utilize many sources to collect data. These sources help the Companies to have a key position between the competitors. The results show that the highest three sources were trade fair, customer and supplier with 27.8%, 18.9% and 17.1% respectively. Fig (4) represents the results.
50% of the companies said that they review their technological needs annually. Fig (5) represents the results.

**Fig (5): Frequency of technology needs**

![Diagram showing frequency of technology needs](image)

### TECHNOLOGY SELECTION

**Level of technology selection practice**

Fig (6) shows the results. The overall average score of technology identification is 74% at high level. The company takes the technological abilities and contributions of such technology in quality improvement came first with a percentage of 80%.

![Diagram showing level of technology selection practice](image)

### FACTORS AFFECTING THE SUCCESSFUL SELECTION OF TECHNOLOGY

Fig (7) shows the results. The results indicated that the existence of clear strategy for work, the relation between the company and customers and product specification required for operation volume, productive rate and stock level had the same weight at 18.62%.

![Diagram showing factors affecting the successful selection of technology](image)

### TECHNOLOGY ACQUISITION

#### Factors affecting the expenditure on research and Development

Factors affecting on expenditure in research and development were identified through 4 statements as shown in fig (8). Results showed that assessment of market needs scored the first rank having a weight of 32.3%, followed by the annual profits of the company with a weigh of 29.0%.

![Diagram showing factors affecting the expenditure on research and Development](image)

#### LEVEL OF TECHNOLOGY ACQUISITION PRACTICE

Fig (9) shows the percentage according to their ranking in a descending order. The overall average is 66% at moderate level. The first statement was, before adopting a new technology, the company attempts to measure how the technology will improve the operations (increase speed, reduce cost, etc.) with a percentage of 81.2%. Before adopting a new technology, the company takes into account all the costs associated with implementation (staff training, maintenance, opportunity cost, etc.) scored the second rank with a percentage of 77.6%.

![Diagram showing level of technology acquisition practice](image)
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WAYS OF ACQUIRING TECHNOLOGY

Acquiring technology could be in three ways, fully external acquisition, acquisition by collaboration with other organizations and fully internal acquisition. Fig (10) shows the percentage of each way for the last three years in the companies under the study. The majority of the companies prefer fully external acquisition with 53.7%. Acquiring by collaboration scored 24.7%.

Level of Technology Exploitation Practice

The level of practicing technology exploitation at the companies under the study was measured by 2 statements. The percentage was calculated, fig (11) summarize the results according to their ranking in descending order. The results showed that the percentage is 80%, which means they are at high score.

Level of Technology Protection

Fig (12) shows the results, the companies believe that their technology is valuable assets achieved the first rank with a percentage of 73.8% at high level.

PROTECTION METHODS

Fig (13) shows that the top managers give the priority in technology protection in maintaining highly professional and experienced employees with a percentage of 80% at high level. It is clear from the results that top managers should focus more on protecting their technology through intellectual property right, copy right and patents.

ANALYSIS OF COMPETITIVE ADVANTAGE

Fig (14) shows the level of competitive advantage. The respondents are generally agreed with the level of competitive advantage with a percentage of 82.7%.
TESTING OF HYPOTHESES USING SPEARMAN ANALYSIS

The results indicate a positive correlation between technology management practices and (cost, quality, differentiation) with a Significant value of (0.027), (0.037) and (0.014) respectively. Therefore, the three hypotheses were accepted.

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