COST OF QUALITY AS A TOOL TO IMPROVE THE PALESTINIAN INDUSTRIAL ORGANIZATION COMPETITIVE ADVANTAGE

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Abstract

This research figure out the influence of cost of quality (Prevention, Appraisal, Internal failure, and External failure costs) on the competitive advantages dimensions (Cost, Quality, Flexibility, Delivery, and Creativity Advantages), research sample consist of 103 participants, the research sample showed that there are real challenges to those organizations to track the behavior of the quality and understanding of the costs, and then their role in achieving added value. The research found many conclusions both theoretically and practically, the most important was: that the detection of the cost of quality can be a real indicator to check the ability of industrial organizations to achieve competitive advantage. The research has provide several recommendations of which was the successful implementation of the detection of cost of quality in the surveyed industrial organizations requires the restructuring of traditional quality systems to achieve a state of cooperation between the quality, financial and engineering sections, and other sections or departments to ensure effective flow of real participation of knowledge and information related to track the cost of quality, its activities and positions and its future results together with unforeseen costs that will have important implications in performance in those industrial organizations.

Keywords: Cost of Quality, competitive Advantages, Industrial Organization

I.   INTRODUCTION

Cost of quality has attracted the concerns of many researchers and practitioners, as cost of quality considered to be one of the topics of real criticism of the traditional techniques to respond in the examination of production quality in the light of the rapid changes to the global economics, as a logic of competition on the basis of economies of scale towards knowledge economies, as intangible resources considered the most important source of competitive organizations and achieve a competitive advantages. The cost of quality is seen as one of the most important strategic tools to strengthen the competitive advantages of organizations. Specifically after turning manufacturing systems of the philosophies of mass production to the virtual manufacturing, and from samples acceptance to total quality, which has became more

important challenge for the traditional control of the quality systems. As accelerating changes in manufacturing environments in the areas of design and production technology and information, making many traditional techniques to monitor the quality of the products in order to communicate with those rapid changes in virtual manufacturing environments. Therefore this paper came from a modest attempt to view the impact of the cost of quality, through discussion and examination, as one of contemporary technology to strengthen the competitive advantages of industrial organizations in terms of the level of variation in interpretation of competitive advantages in the field of quality, in terms of cost, flexibility, creativity and speed of response.

From the above it is clear that cost of quality considered as one of the topics that pose a challenge to researchers for two reasons: first, the most important essential component of cost of quality are hidden costs, which are non-measurable as direct cost., and the other challenge is the detection of the results of the cost of quality cannot be touch in the Foreseeable future. They are costs of contents of perspective strategy that affect the competitive status of the organizations in the costs of its ability to growth and prosperity to achieve strategic advantages. The research sought to analyze and diagnosis the role of cost of quality in strengthening the capacity of industrial organizations to achieve competitive advantages, as the researcher post several questions most important are the perceptions of Industrial organizations sample on the contents of the strategic role of cost of quality in detecting and diagnosing of continuous improvement opportunities that necessarily means to strengthen competitiveness in reducing the cost and improving the quality, flexibility, delivery and creativity, this question was raised after the fundamental search results that was based on intensive set of interviews with some key people in the industrial organizations.

This paper includes five sections: the first dealt with the scientific methodology of the paper, and the second devoted to view theoretical frameworks and intellectual subjects of the cost of quality, while the third focused on the review of competitive advantages literature. The fourth dealt with the practical side of the research and tested variables; while the last section provide the key findings, conclusions and recommendations of the research.

II.   METHODOLOGY

2.1 Statement of the problem

The research problem has been drafted according to the following questions:

1. How the surveyed industrial organizations consider the cost of quality as a tool to achieve value-added and diagnosis opportunities for continuous improvement of quality?

2. What is the level of interest and the nature of treatment adopted by those industrial organizations to track and control cost of quality of it's several types?

3. What is the nature of competitive advantages adopted by industrial organizations? And the level of interest adopted by those organizations for competitive advantages? The level achieved?

4. How can causal relationships or influence relations be explained between costs of quality and dimensions features of Competitiveness in industrial organizations?

2.2 The importance of research

The importance of the current research demonstrated in two dimensions: first theoretical and conceptual, as the researcher tried to provide conceptual frameworks for the cost of quality, as one of the important tools of continuous improvement and competitive advantages, through surveys that the researcher review the literature relevant. The practical dimension or the practical importance of the research is to try to explore and diagnose the reality of cost of quality in a number of Palestine industrial organizations systems, in a way to answer the question posted in this study, which represents the analysis and diagnosis of qualities that contribute to the cost of quality to improve the competitive advantages of various dimensions of the industrial organizations , as the research concluded and provide several recommendations that will contribute to enhancing the awareness of management of industrial organizations and workers and the need to adopt techniques that provide cost of quality as part of industrial organization documentations throughout systems to support continuous improvement in industry organizations programs.

2.3 Research Objectives

This research paper seeks to achieve the following objectives:
1. Illustrating the theoretical and intellectual frameworks related to cost of quality and it's discussions.
2. Displaying the theoretical and intellectual frameworks relevant to competitive advantage and it's discussions.
3. Analyzing the practical reality of cost of quality in the industrial organizations and it's diagnosis.
4. Analyzing the extent to which the dimensions of competitive advantages in the surveyed industrial organizations is achieved, and the diagnosis in the field of cost, quality, delivery, flexibility and creativity.
5. Coming up with a set of conclusions and recommendations that could contribute to improve the ability of organizations covered in this research that employed cost of quality and its role in achieving competitive advantages.

2.4 Research Conceptual framework

This research tries to reflect the embody of the phenomenon researched and simplify it, by defining its variables and components to specify the relationship between the components. Therefore the researcher have tried to develop this research in the framework of two main variables: the first is the cost of quality as an independent variable, which includes four sub-variables namely: (Prevention Costs, Appraisal Costs, Internal Failure Costs and External Failure Costs), while the second variable represents the competitive advantages, which serve as the dependent variable in this research, and includes five sub-variables (competition on the basis of least cost, competition based on high quality, competition on the basis of delivery, competition on the basis of the high flexibility and creativity). Table (1) represent the default hypotheses framework of this research illustrating both the independent and the dependent variables and relationships between them.

Table 1: Research Hypotheses Framework

Cost of Quality Variables	H 1 to 4	Competitive Advantages Variables
Prevention costs (PVC)	H1	Cost Advantage (CA)
Appraisal Costs (APC)	H2	Quality Advantage (QA)
Internal Failure Costs (IFC)	H3	Flexibility Advantage (FA)
External Failure Costs (EFC)	H4	Delivery AND Creativity Advantage (DCA)

2.5 Research Hypotheses
Based on the statement of the problem, the following hypotheses was drawn:
1. There is a significant relationship between the cost of quality variables and the competitive advantage dimensions.

2.6 Methods of data gathering and data analysis
The researcher depends on the following methods:
1. Review on books, periodicals, magazine, related to cost of quality and competitive advantages.
2. Review publication over the internet regarding cost of quality and competitive advantages.
3. Personnel interview with key people in the industrial organization.
4. The questionnaire as a tool that covered both dependent and independent variables of cost of quality and competitive advantages, which consist of (63) elements.

2.7 Research Sample and Population
In order to address the problem of this study and test its hypotheses, 19 out of 41 industrial organization listed in Palestine stock exchange where selected as the population of this study, fifteen out of nineteen industrial organization participated in this study. The researcher selected the respondents from three section involved in the calculation and handing of quality cost, these are quality, financial and engineering section's staff totaling 132 employees, only 112 form the sample of this study. Therefore the study sample consist of 112 employees in three section of all selected industrial organization, The total responses after distribution of the questionnaires

consist of 103 questionnaire or 92% the actual questionnaires received, representing the actual size of the sample of the total respondents community.

2.8 Research Limitation

Place Limitation: This research covered several industrial organization listed in Palestine exchange market.

Time Limitation: this research has been done through the period of September to December 2015

Topic Limitation: this research was limited into two major topics (the Cost of Quality and the Competitive Advantages)

HR Limitation: this research involve all employees from three sections (the quality section, the financial section, and the engineering section)

III.   RESEARCH LITERATURE

3.1 First: Cost of Quality

Its agreed that from the literature the first contributions of knowledge in the field of the concept of cost of quality was to Juran and Feigenbaum, (Juran,1951 & Feigenbaum, 1956), however from a traditional perspective, the cost of quality often understood from the standpoint of productivity by focusing on the costs arising from the deviation from production specifications. (Crosby, 1979) However with the expansion of the concept of quality as a competitive advantage of the most important dimensions, researchers and commentators disagree on a specific concept of the cost of quality, except that there is an agreement on the conformance costs plus the costs of non-conformity. (Schiffauerova & Thomson, 2006), Or as the total costs arising out from activities done by the organization necessary to avoid bad quality, or prevention. And the costs arising to ensure the quality and evaluate the costs and other requirements arising from the bad quality after production (Fine, C.H., 1986). On the other hand (Machowski & Dale, 1998) said it is widely accepted to classify these costs to the conformance costs and the non-conformance cost. However (Schiffauerova & Thomson, 2006) explains that the conformance costs is the price that industrial organization pays in exchange for the prevention of bad quality, such as examination costs and quality evaluation, while the costs of non-conformity is the cost of bad quality, which is caused by the product or service failure such as (returns and re-work ... etc) and the cost of quality was defined as the costs that occur in the design of quality management systems and implementation, adding to that the operation and maintenance cost, as well as the cost of resources which coincides with the continuous improvement, the cost of the system, the cost of the product or service failure, and the cost of activities that has no value added. (Dale & Plunkett, 1995) said as emphasize by (Crosby 1979) a cost that a project takes occurred when the failure to do things correctly from the first time. More specifically the costs of quality described as "the added costs that occur as a result of poor quality. (Sorqvist, 2001) It is noted that these definitions are based on the costs caused by the bad quality, while (Brekke & Franzen) employed a term called losses instead of costs, as their point of view says the reduction in income caused by bad quality must be included in the framework of the concept of the cost of quality. And perhaps the last will be the (community

losses) may make the concept of the cost of quality be more academic perspective (Brekke & Franzen, 2007). The researcher believes that the cost of quality is defined as "the total losses of the organization that is caused by the products and operations with non-conformity" .and it is noted that previous definitions were broad because it included costs that do not add value, which in return is not a traditional perspective of the cost of quality, as well as it included the arising losses from bad quality, including losses from society as quality costs perspective by the British standard of quality (BS4778) and all expenses that arise from product and the user community which are associated with the product or service quality, and any cost related to quality, wherever the expenses it occurs will be as a result of the prevention and appraisal activities of products, as well as losses due to internal and external failure. (Alexandros et al 2000).

3.2 Cost of Quality elements
Juran & Feigenbauin presented The first classification of the cost of quality, which consist of four elements (Prevention Costs, Appraisal Costs, Internal Failure Costs, and External Failure Costs (Superville & Gupta, 2001) as follows:
1. Prevention costs: the costs that coincide with the cost that arise from activities of preventing defective occurrence in products or services, or as a direct and indirect costs related to the activities of training, education, survey studies, quality circles, engineering design, and engineering quality, as well as the activities of attention to quality, as a dimension of competitive strategy, as it aims to keep the prevention failure costs to their minimum requirement. In short, it is a cost that arise because of the efforts and activities that aim to do what is right from the first time.
2. Appraisal costs: the costs arising due to measure the quality of products or services and evaluation activities, to ensure compliance with the specifications. The examination includes the costs of screening supplies (purchased materials), auditing, examining, and controlling the manufacturing and operational processes, as it means the direct and indirect costs to determine the degree of conformity
3. Internal failure costs: the costs that fall and reveal during production processes and before shipping the product or deliver the service to the customer, therefore it's the costs which coincides with the defective production discovery before it is delivered to the customer and includes damage costs, re-examination, or re-testing, and the costs of interruptions times due to quality problems, or the opportunity costs arising from the classification of products in second place or the low quality of the product, as this costs do not show when the product is free from defects.
4. External Failure Costs: It is a cost caused by defective products or discovered after shipping the products or delivered services to customers, it includes warranty, returns costs, handling customer complaints and allowances given to customers due to none conformance of products to the specifications, and also includes direct and indirect costs, such as labor costs or delivery cost which coincides with the diagnosis of customer complaints and the follow-up, adding to that the costs of examinations and tests and field repairs. These costs do not appear when the products match the specifications or requirements.

From the forgoing classification of the cost of quality into conformance and non-conformance costs. As the conformance costs refer to the costs coincides with efforts to ensure that the products and services conforms the pre-defined criteria. This includes prevention and appraisal costs. The costs of non-conformity are those costs that occur as a result of the lack of conformity of products with the quality standards. This includes internal and external failure costs. Some researchers classified it as the cost of lost opportunities that represent costs resulting from the loss of revenue as a result of the loss of customers and a failure to earn new customers. For instance, and as a result of these failures customers could be subject to move from current organization to the competitors, which will cost the organization losses as a result of external failure of the products (Brekke & Franzen, 2007). However another classification of the costs of quality as (Gavranic, 2005) believes that the operational costs of quality can be classified into quality costs, these costs coincides with the prevention Activities which includes (Prevention and appraisal) and the costs of non-quality, which is arising from the difference between products quality and the desired quality.

Consequently cost of quality can be classified also as a direct and indirect costs, direct costs of quality can be observed and followed-up within the organization, while indirect costs are costs that can be aware of the customer. However, in the end it returns to the organization as a loss in terms of market share, taking into consideration that quality costs are costs resulting from the customer's needs and expectations, and that the failure of internal and external costs are caused by direct failure cost and poor operational efficiency. (Sippola, 2008: 109)

IV.   COMPETITIVE ADVANTAGE CONCEPTS

4.1 The Competitive Advantage

Historical literary perspective concerns the concept of competitive advantage since the early twentieth century, specifically during the year 1911 as many researchers and practitioners tried to answer the question namely; what are the reasons behind the performance of the different organizations? and why some of them superior to others? (Barney & Arikan, 2010) the literature of strategic management have tried to provide explanations and justifications that demonstrate the competitive advantage sources since the launch of the concept of strategic management at the beginning of the year 1950, according to two perspectives: the first focused on the exciting attention to the fact that the need to create compatibility or matching between the internal situation of the organizations and the external changes for the implementation of the organization's policy as a social system, this perspective has been developed subsequent to the analysis of what is currently known as SWOT Analysis, in order to create matching or combination of strengths, weaknesses, opportunities and threats (Kong, 2008)

The followers of the relevant literature concerning the competitive advantage can distinguish between three perspectives of knowledge or theory to frame the concept of competitive advantage. The first perspective has focused on the industry resource view definitions, as "Competitive Advantage is in the heart of the organization's performance in competitive markets". (Porter: 1985), while the second perspective has focused on the resources based view

definitions, as "The project which has a competitive advantage that must be capable to create more economic value compared to the marginal revenue for competitors in the product market. However the previous definition focuses on how average firms within one industry compete, the resource-based View sheds considerable light on how individual firms differ from each other within one industry and sustain competitive advantage? (Mike W. Peng, 2012). As the economic value can be created by the project by providing a range of goods and services that represents the difference between the benefits gained from buyers and the economic cost to the project (Peteraf and Barney, 2003) and finally the third perspective based on core capabilities, "As the performance goals that help the organization in measuring the performance operations which are related to the achievement of strategic objectives. (Greasley, 2009).

In light of the foregoing, the researcher believes that the competitive advantages of the organization's ability could be the ability to provide unique value to the customer through differentiation or uniqueness of the activities of the value chain compared to competitors now and in the future.

4.2 Competitive Advantages Dimensions

As the case with the concept of competitive advantage, the competitive advantages dimensions and standards have not gain the agreement of the literature and related studies, however the difference extended to the terminology and even target conventions designations to describe sustainable advantages scale of previous competitiveness, performance dimensions, performance criteria, performance goals, and the manufacturing strategies dimensions. With all the differences in the terminology used, however there is a noticeable agreement about the implications of these dimensions and essence, even though the differences exist in the terminology used.

- Quality or Differentiation: The literature has agreed on two basic dimensions of quality, these are the design quality (DQ) and conformance quality (CQ), as the design quality refers to the level required to meet the product characteristics (design specifications) to the customer's needs and expectations, while the quality of conformity, means the performance of product or service level compared to the design specifications , In order to ensure that the product or service can satisfy the customers needs and expectations, the industrial organization should design products which can be capable of customer satisfaction through product design quality, and then meet those specifications through the quality conformance. (Horngren et al, 2006).
- The Cost: The adoption of cost as a competitive tool necessarily means the adaptation of production processes to reduce or eliminate activities that do not achieve added value, and as a result of that several things can happen, these are: the reduction of capital cost, the cost of work, the cost of the product, the cost of operations and inventory, the cost of transportation and handling and reduction of losses and ratios of defective products. On the other hand many researchers believes that competition on the basis of cost means the focus on the following costs: (Slack et al, 1998; Krajewski & Ritzman, 2010)
  - Reduction of work costs
  - Reduction of facilities, equipment and technology costs

- o Reduction of resources costs
- o Reduce damage costs

In contributing to reduce the cost per unit. The cost-based on competition requires the industrial organizations to consider the following:

- ▪ Developing operation that high capital efficiency despite the accompanying loss of the advantages of flexibility and diversification of products that can be overcome by using the broad recommending technology.
- ▪ Economic use of fixed and current assets.
- ▪ Maintaining the minimum levels of inventories, while ensuring a non-stop production processes.
- ▪ The practice of tight operations in order to reduce the internal failure costs, re-work, defects and other costs.

- Delivery: Usually industrial organizations look at the time factor and the speed of response as the most important factor, therefore managing operations properly and accurately will increase revenue and reduce costs. Taking into consideration the response to customer needs and expectation refers to the timeline, starting from the receipt of the customer's order until the completion of his needs, and the time of manufacturing cycle refers to the time it takes manufacturing the customer order to be the final product, which is equal to the total waiting time and the time of manufacturing. However the delivery time refers to the time spent to deliver the customer orders. Therefore several industrial organizations employs manufacturing cycle time based on the allocation of indirect costs of industrial products, thus feeling this will motivate managers to reduce manufacturing cycle time, while for on-time delivery, it refers to the product or service delivery on-time as specified and scheduled. The delivery on-time will increase customer satisfaction and loyalty, and to achieve this goal, it requires a shift between the response to the customer and on-time delivery time. (Horngren et al, 2006)

- Flexibility: (krajewski et al 2010) indicates that flexibility has three dimensions as follows:
  - o Customization, as it refers to the processes that have the capacity to provide products with less capacity while keeping intensive contact with the customer and the ability to reshape the resources and processes to meet the different types of customer needs.
  - o Diversity or variety, as it refers to the processes that have the ability to provide the largest volume of production compared with the previous element (Customization), taking into consideration that unique products and services to customers should not necessarily be specific, and there may be frequent requests.
  - o Volume flexibility, as it refers to the ability to change the energy (or stock) to deal with the flexible size fluctuations in demand that accelerated in the contemporary business environment developments, as it means a shift from a seller's market to a buyer's market. This means a shift from technology flexibility towards market flexibility, the flexibility of the technology means that the organization develops its products according to their technological capabilities.

The customer buys those products at a price that depends on the total cost of production plus a profit. However in case of low prices because of competition and changing markets, the organization can't develop new products in spite of its technological capabilities, as it will be expensive for the customer. In such cases, the organization should be heading towards the market to determine more accurately the cost of the products. In all cases, it seems that the role of effective calculation of quality cost is necessary in stages of design and production, the orientation towards market flexibility means attention to activities that coincide with the creation of customer satisfaction.

However shifting from large-scale production systems to customization systems will certainly change the order of rotation between the competitive advantages in a way that changes the interesting industrial organizations to shift their focus on the advantages of cost to flexibility as customer preferences quickly and unexpectedly change towards products with less price and high quality and delivery rates faster and more customized to respond to the unique needs (EIKelety, 2006).

- Creativity: as one of the competitive advantages that has been newly added, as it require the industrial organizations to compete through creativity, while industrial organization must have strategic capabilities, which qualifies them for the development of new products and services or to be able to develop new technological process, all of which are aimed at achieving the outputs with high specifications, taking into consideration for instant the cell phone, laptop, digital camera, and the stunning developments in the field of bio-engineering are clear examples of innovations in the field of products, services and processes, thus innovations contribute to innovations in opening new markets for organizations and increase their market share and profitability, thus industrial organizations can gain the benefits of creativity in the development of new products and processes faster than competitors in the market, and it can achieve a sustainable competitive advantages. Creativity means the selection of the right ideas, implementing it and translates them into products, processes and services and new management systems, to improve the profitability and growth of the organization. The remaining projects and ideas will still be un-creative, if not translated into the language of the market. At the level of classification of creativity, it is classified into technological innovation, product innovation and process innovation.

V.   FIELD STUDY

Testing the relationship changes between quality cost variables and competitive advantage variables. As this section presents and discusses the findings as the results of testing the influence relations between the approved variables in the research, which was completed with the help of the SPSS software package.

First: testing the relationship influence between cost of quality and competitive advantages. A Simple & Multiple Regression test has been used to illustrate and verify relationship between cost of quality variables and competitive advantages dimensions in terms of (T&F). as the value

of cross-tabular was verified and calculated through comparison of statistical program directly. And the results of this test would respond according to the sequence-based hypotheses of this research as follows:

Testing the relationship influence between prevention costs and competitive advantages as follows:
The sub hypotheses (H1) has a dissemination impact in principle that prevention cost registered a significant relationship in competitive advantages in industrial organizations in this research paper, and according to this hypothesis, the results of the regression analysis of the content of the hypothesis illustrated in the following table:

Table 2: Results of simple and multiple regressions between prevention costs and competitive advantages of the industrial organizations in this research N=103

Hypotheses	Regression Path	Regression Coefficient	T Value	R2 & F
H1	PVC _ CA .	0.292	4.682*	
	PVC _ QA	0.616	6.879*	0.845
	PVC _ DA	0.127	1.876	F=10.014**
	PVC _ FA	0.087	0.129	
	PVC _ IA	0.591	5.768*	

* significant at 0.05 level, ** significant at 0.01 level

It could be noted from the results of the analysis of variance and the indicators of simple regression analysis as confirmed with the sample of (103) responsive to accept dependents regression model in terms of (F), which exceeded the calculated tabulated value of the level of significance as registered at (0.01) and the degree of freedom of (91). These indicators means that the simple regression analysis was able to describe the relationship between the costs of prevention (PVC) and dimensions of competitive advantages in the industrial organizations with confidence level of (0.99) specifically the relationship between prevention costs and quality advantages (QA) with a simple regression factor of (0.616), followed in importance the relationship effects between prevention costs and the creativity advantages factor with a confidence level of (0.591) followed by the relationship effects between quality costs and cost advantages with a simple regression confidence of (0.292) at the significant level of (0.05). On the other hand the prevention costs registered no significant relationship on the delivery and flexibility advantages, as prevention costs variable was interpreted with the significant level of (.485) of the expected dimensions of competitive advantage in the industrial organizations of this study as a whole, as it was significant at the level of (0.01) in terms of the calculated (F), which was registered (F = 10.014). From the forgoing, as the test indicates the acceptance of the first sub-hypothesis (H1), which stipulates the existence of the effect of the relationship between

the prevention costs and dimensions of competitive advantages in the industrial organizations covered in this study. However in terms of quality, creativity and cost advantages the alternative hypotheses was accepted regarding the relationship effects between the prevention costs and the delivery and flexibility advantages.

Second: testing the relationship influence between appraisal costs and competitive advantages
The sub-hypotheses (H2) has initially dissemination that appraisal costs have a significant impact in the competitive advantages in the industrial organizations of this study according to this hypothesis, the results of the regression analysis of the content of the hypothesis shown in the following table:

Table 3: Results of simple and multiple regression between appraisal costs and competitive advantages of the industrial organizations in this research N=103

Hypotheses	Regression Path	Regression Coefficient	T Value	R2 & F
H2	APC _ CA .	0.136	1.403	0.434 F=8.119**
	APC _ QA	0.236	3.654*	
	APC _ DA	0.241	4.975*	
	APC _ FA	0.045	0.811	
	APC _ IA	0.201	2.768*	

* significant at 0.05 level, ** significant at 0.01 level

It was confirmed that the analysis of variance results and the indicators of simple regression analysis with a sample of (103) responsive to accept the dependents regression model in terms of (F), value, which exceeded the calculated tabulated value at the level of significance of (0.01) with a degree of freedom of (91). This indicates the regression model was able to describe the relationship between the appraisal costs (APC) and the dimensions of competitive advantages in the industrial organizations with the confidence limits of (0.99), specifically in the paths of appraisal costs and delivery advantages (DA) with a registered factor of simple regression of (0.341), followed in importance the effect relationship between the appraisal costs and quality advantages (QA) with a slope value of (0.236), followed by the effect relationship of appraisal costs and creativity advantages with a simple regression level of (0.201), all of which indicates a significant relationship at a significant level of (0.05). On the other hand, the test revealed no significant relationship between the appraisal costs with cost advantages and flexibility advantages, as revealed by a significant coefficient of (0.434.) at a significant level of (0.01) in terms of the calculated value (F), which amounted to F = 8.119. the forgoing results proved the acceptance of the second sub hypotheses (H2), which stipulates the existence of the effect of the relationship between the appraisal costs and the dimensions of competitive advantage in industrial organizations in this study in terms of delivery, quality and creativity advantages.

However the acceptance of alternative hypothesis regarding the effect relationship between appraisal costs and cost and flexibility advantages.

Third: testing the relationship influence between internal failure costs and competitive advantages.
The sub-hypotheses (H3) has initially dissemination that internal failure costs have a significant impact in the competitive advantages in the industrial organizations of this study. According to this hypothesis, the results of the regression analysis of the content of the hypothesis shown in the following table:

Table 4: Results of simple and multiple regressions between internal failure costs and competitive advantages of the industrial organizations in this research N=103

Hypotheses	Regression Path	Regression Coefficient	T Value	R2 & F
H3	IFC _ CA .	0.288	3.006*	
	IFC _ QA	0.376	4.884*	0.384
	IFC _ DA	0.466	7.975*	F=7.972**
	IFC _ FA	0.096	0.489	
	IFC _ IA	0.081	1.530*	

* significant at 0.05 level, ** significant at 0.01 level

The analysis of variance and the indicators of regression analysis results confirmed the acceptance of study sample of (103) responsive to accept the regression analysis, in terms of value (F), which exceeded the calculated tabulated value at the level of significance of (0.01) with a degree of freedom of (91). This means that the regression analysis was able to describe the relationship between the internal failure costs (IFC) and the dimensions of competitive advantages in the industrial organizations with confidence level of (0.99), specifically in the relationship between the internal failure costs and delivery advantages (DA) by a factor of simple regression value of (0.466), followed in importance the relationship effects between internal failure costs and quality advantages (QA) by a factor of slope value of (0.376), then the relationship between the influence of internal failure costs and the cost advantages by a factor of simple regression value of (0.228) all of which were significant at the level of (0.05). On the other hand the test revealed no significance differences between the internal failure cost and flexibility, creativity advantages, as the test for the internal failure cost variable in general revealed the level of (0.384) of the variance with all the expected dimensions of competitive advantages in the industrial organizations in this study, at the level of significance of (0.01) in terms of the calculated (F) value, which amounted to (F = 7.972). Therefore these results confirmed the content of the third sub-hypothesis (H3), which stipulates the existence of the effect of the relationship between the internal failure costs and the dimensions of competitive

advantages in the industrial organizations under this study, with respect to delivery, quality and cost advantages. However the alternative hypothesis regarding the relationship between the influence of internal failure costs and creativity, flexibility advantages was accepted.

Fourth: testing the relationship influence between external failure costs and competitive advantages.

The sub-hypotheses (H4) has initially dissemination that external failure costs have a significant impact in the competitive advantages in the industrial organizations of this study. According to this hypothesis, the results of the regression analysis of the content of the hypothesis shown in the following table:

Table 4: Results of simple and multiple regressions between external failure costs and competitive advantages of the industrial organizations in this research N=103

Hypotheses	Regression Path	Regression Coefficient	T Value	R2 & F
H4	EFC _ CA .	0.219	3.578*	
	EFC _ QA	0.419	8.341*	
	EFC _ DA	0.237	6.855*	0.452 F=8.582**
	EFC _ FA	0.0.50	0.610	
	EFC _ IA	0.210	3.440*	

* significant at 0.05 level, ** significant at 0.01 level

The results of analysis of variance and the indicators of regression analysis confirmed the sample of (103) responsive to accept the relationship between the external failure costs in terms of (F) value, which exceeded the calculated tabulated value and the level of significance at (0.01) with the degree of freedom (91), this means the regression analysis test was able to describe the relationship between the external failure costs (EFC) and the dimensions of competitive advantages in the industrial organizations with a confidence limits of (0.99). Specifically the relationship between the external failure costs and quality advantages (QA) with a factor of simple regression worth of (0.419), followed in importance effect relationship between the external failure costs and delivery advantages (DA) by a factor of slope value of (0.237), then the effect relationship between cost advantages and the external failure cost by a factor of simple regression worth of (.219), and finally effect relationship between the external failure costs and creativity advantages by a factor worth of (0.210), all of which were significant at the level of significance of (0.05). On the other hand the test reveals no significance differences between the external failure costs and the flexibility advantages, as external failure cost was interpreted with value of (.452) of variance in the dimension of competitive advantages in industrial organizations of this study, at a significant level of (0.01) in terms of (F) value, as it reached (F = 8.582). however taking into consideration the previous results the content of the

fourth sub-hypothesis (H4), stipulates the existence of the effect of relationship between the external failure costs and the dimensions of competitive advantages in industrial organizations of this study with respect to the cost, delivery, quality and creativity advantages which accept the alternative hypothesis regarding the effect relationship between the external failure costs and flexibility advantages.

Finally, in order to verify the content of the hypothesis |(H4), which stipulates a significant relationship effect between quality costs with all its variables and the dimension of competitive advantages together. The multiple regression analysis test was re-tested and the test results, as in Table 6 below

Table 5: the influence of cost of quality on competitive advantages in the industrial organization in general N= 103

The independent variable	Quality Cost		R2	Value (F)	
Dependent variable	(b_o) (*)	(b) (**)	0.450	Indexed	The calculated
Competitive advantage	1.401	0.671*		2.326	17.305**

* Significant at 0.05 level, ** significant at 0.01 level

(b_o)* it represents the estimated value in this study if the value of the independent variable equal to zero.
(b)** It represents the amount of change in the variable adopted as a result of changes of independent variable by one unit.

As seen from table (6) above, there is a positive significant relationship exist in the effect of cost of quality combined variables and competitive advantages with its various dimensions, as the calculated value of (F) equal to (17.305), which is greater than the tabulated value of (2.326) with the degree of freedom of (94) at the level of significance of (0.05) with confidence level of (0.95). This presents the regression equation. However it is inferred from the value of the coefficient of determination (R2) that explanatory susceptibility to the regression equation amounted to (0.450) which means that (0.450) of changes in the competitive advantages were interpreted due to quality cost with all its combined variables. This supports the content of the major hypothesis (H) which indicate the existence of a significant effect relationship between quality costs and competitive advantage in industrial organizations under this study.

VI.   CONCLUSION AND RECOMMENDATION

6.1 The Conclusion

- The researcher via live structured interviews with key people in subject industrial organization that consist of interviewing stakeholders, accountants, auditors, engineers and senior management and the various departments in the industrial organizations did not noticed that the existence of modern tools for measuring cost of quality, as still those industrial organizations rely on traditional techniques in the classification of all types of costs, which covers the processing and returns that are considered costs, and the costs the industrial organization spend on quality department or section.

- The industrial organizations in this study Lacks approved classification for the cost of quality, and the ignorant of many specialists working in the quality control departments and accountants the contents of the traditional classification of the costs of quality (prevention costs, appraisal costs, internal and external failure costs), but that many of them neglect the internal and external failure costs, as those industrial organizations chargeback deliberately to cost centers and control center in the organization by loading it on the quality of its share of the total cost of quality, regardless to any classification of those costs.

- All industrial organizations covered in this study lack a system of accounting reports tracking re-manufacturing costs during or after the end of the production processes, as well as for the damaged production costs or non-conforming to the specifications which are calculated with production costs under operation, although those costs attributed to the overall costs which forms the most important indicators to total quality management in the industrial organizations.

- The concentration of industrial organizations in this study on the quality as the most important competitive advantage as a priorities will not achieve its objectives if quality costs are not paid equal attention, in spite of the difficulties faced by those industrial organizations in the development of an integrated cost of quality reporting system, that the most important of those costs component is hidden costs or non-measurable.

- The combined quality costs achieved an interpretation of significant ability of industrial organizations under consideration in the development of competitive advantages and develop it. This was more pronounced in the quality advantages of perspective of conformance to specification, followed by cost advantages, delivery advantages, while for flexibility and creativity advantages was with lesser extent. This confirms the validity of the causal relationship between the costs of quality and improve the competitive advantages of the organizations in this study by improving all performance tools (financial sources and non-financial sources).

6.2 The Recommendation

Based on the conclusions adopted by the research, and according to the results hypotheses tests and assumptions adopted, the researcher recommends the following:

- Urged researchers and practitioners to re-test the role of quality cost in the success and achievable competitive advantages outside the classification variables (PAF), which has been several criticism, for its inability to keep track of the cost of quality, during the implementation of continuous improvement processes of operations and products, as well as the weakness of its ability in dealing with the unseen costs of quality, which can keep track of activities and centers costs more accurately.

- To adopt Supreme control, both at the local and international level legislation that requires the organizations for the development of a system for quality costs in order to provide senior management with information and data to help them uncover opportunities for continuous improvement, diagnosis, evaluation and control of the areas of spending money on quality, especially after all the evidence that quality costs elements are neglected topics in most of our organizations.

- The development of the surveyed industrial organizations, each according to the nature of their work and manufacturing processes, a modern system to track the costs of quality involves that will identify cost centers, and basic activities that represent the most important guidelines for quality costs associated with systemized documented behavior for those costs through the stages of operations and various manufacturing processes, with the need for a complete separation between those costs and their ratings, in order not to process it randomly according to the proportions determined by pre-allocation systems.

- The industrial organizations should seeks to consolidate a culture of quality at the source and do what is right from the start, as the internal failure costs through defective production reports of poor production does not provide real data on the etiology, or may not provide realistic image regarding quality problems, and this can be overcome by focusing on the prevention costs, and appraisal cost to avoid defective from the source.

REFERENCES

[1] Alexandros A,Mentsa C. and Lacovidou (2000) The Challenge of Measuring the Cost of Quality http://www.gr.edek.uni.cy.

[2] Barny & Arikan (2010) , Integrating Business Models and Strategy for Sustained Competitive Advantage, Harvard Business School Press, Boston, Mass.

[3] Beecroft G (2000) Cost of Quality ,Quality Planning and the Bottom Line, Http://www.gdennisbeecroft.ca

[4] Brekke & Franzen (2007) Ouality costs? Using Quality Costing to Promote Quality Improvement in Chinese Company, Msc Thesis ,Lulea University.

[5] BS 6143: Part 1:(1992), Guide to the Economics of Quality: Part 1, Process Cost Model, British Standards Institute, London.

[6] BS4778 (1987) ,"Quality vocabulary", British standards, Institute, London.

[7] Cooper&Kaplon(1996),Measures costs right, Make the Right decisions, Harvard Business Review, September.

[8]   Crosby PBC(1979) Quality Is Free, New York, mentor.

[9]   Crosby, P.B., Quality is Free. 1979, New York, NY: McGraw-Hill.

[10] Dale B.G. and Plunkett, J.J.(1995), Quality costing,2nd edition, chapman and Hall, London.

[11] EIKelety I. (2006) Toward a Conceptual Framework for Strategic Cost Management, PhD Thesis, Chemnitz University of Technology.

[12] Feigenbaum, A.v. (1956) "Total quality control", Harvard Business Review , vol. 34.

[13] Fine, C.H., Quality Improvement and Learning in Productive Systems. Management Science, 1986. 32(10): p. 1301-1315.

[14] Gavranic T.Z.(2005) Monitoring of Quality Costs in the Croatian Hotel Industry, Int. http://www.tatiana.zanin.org

[15] Greasely A. (2009) Operations Management ,2nd edition, one –Willy and sons.

[16] Horngren C.,T., Dater, S., and Foster, G. (2006) Cost Accounting: A Managerial Emphasis, person prentice Hall.

[17] Juran J.M.(1951),Quality control Handbook ,1st edition, McGraw-Hill New York.

[18] Juran, J.M., Quality Control Handbook. 1st ed. 1951, New York, NY: McGraw-Hill.

[19] Kong, E. (2008). "The strategic importance of intellectual capital in the nonprofit sector", Journal of Intellectual Capital, Vol.8, No.4, 72131.

[20] Krajewski L., Ritzman L. and Malhotra M. (2010) Operation Management ,3rd Edition, Pearson prentice Hall.

[21] Machowski F. and Dale B (1998) Quality Costing an Examination of Knowledge Attitudes and Perceptions ,Quality Management Journal Vol.5,No.3

[22] Mike W. Peng Global strategy, 2012, thired edition, south western – cengage learning.

[23] Peterof ,M.,& Barney,J.(2003) unravelling the resource based tangle managerial and Decision Economics, 24(2).

[24] Plunkett J.and Dale B.(1998) Quality Costs ,A Critiques of Some Economics Costs of Quality Models, International of Production research Vol.26.

[25] Plunkett, J.J. and B.G. Dale, A review of the literature on quality-related costs. International Journal of Quality & Reliability Management, 1987. 4(1).

[26] Porter, L.J. and Rayner, P. (1992), "Quality costing for total quality management", International Journal of Production Economics, Vol. 27No1.

[27] Porter, M. (1985) Competitive Advantage: Creating and Sustaining Superior Performance. Free press :New York.

[28] Rodin,W.A.(2009) A cost of Quality Economic Analysis on the Value of Six Sigma Programs in Government Organization PhD Thesis ,Graduate Faculty of Texas, Tech University.

[29] Schiffauerova, A. & Thomson (2006) A Review of Research on Cost of Quality Models and Best Practices McGill University, Montreal, Canada,vol.23.No.6.

[30] Schiffauerova, A. and V. Thomson, A Review of Research on Cost of Quality Models and Best Practices. International Journal of Quality & Reliability Management, 2006. 23(4).

[31] schiffouerova , A. and Thomson, V.(2006)."A review of Research on cost of quality models and Best practices", International Journal of Quality and Reliability management, vol.23.No.4.

[32] Sippola,k.(2008) TWO CASE STUDIES ON REAL TIME QUALITY COST MEASUREMENT IN SOFTWARE BUSINESS, PhD Thesis University, of Oulu, Faculty of Economics and Business Administration.

[33] Slack N. et al (1998) Operation Management, 2nd Edition , Pitman pub. London.

[34] Sorqvist , L. (2001) Six sigma the Swedish way: Proceedings of the 4th International quality management and organization (QMOD) conference, LinkOpings University Sweden. Pp 144-150.

[35] Superville, C.R. and Gupta, S. (2001), "Issues in modeling, monitoring and managing quality, costs", The TQM Magazine, Vol. 13 No. 6 .

[36] Tsai WH (1998) "Quality cost measurement under activity-based costing". International Journal of Quality & Reliability Management vol.15 No 6.

[37] Tyagi R. (2008) Management Innovation ,Journal of Management Science Vol, 6 No.2 Int: www.management.corus.com