The Effect of Product Quality on Business Performance in Some Arab Companies

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Abstract

The purpose of the present research was to assess the effect of product quality dimensions on organizational performance in some Arab companies. Two latent constructs were developed to represent the value delivered by product dimensions, intrinsic and extrinsic value, and two others to represent organizational performance, internal and external. A model was developed to illustrate the product development stages from conception to distribution. A questionnaire was also developed, refined, and tested and was used in collecting data from 198 managers from various companies. Data was analyzed using structural equation modeling techniques in order to provide supporting evidence to five hypotheses regarding the latent structure of the relationship between product quality dimensions and organizational performance. Results support the hypotheses and clearly demonstrate that: first, value delivered by product quality dimensions is composed of two components, extrinsic and intrinsic value; and second, organizational performance is composed of two components, external and internal performance. Results also showed that the effect of extrinsic value is more on external performance than internal and that the effect of intrinsic value is more on internal performance than external. The importance and contribution of the present research are demonstrated in the following: first, a model for the product development stages is proposed in which functional responsibilities in each stage are assigned, second, product quality dimensions are reified for the first time and the underlying structure for the relationship between these dimensions and organizational performance is explicated, third, a data collection instrument for the purpose of measuring product quality and organizational performance is proposed (will be furnished upon request), finally, the present research provides managers with a guiding light as to which product dimensions are most important for improving their organizational performance.

Keywords: product quality dimensions, organizational performance, extrinsic and intrinsic value for customers, product development stages, SEM, confirmatory factor analysis

INTRODUCTION

The quest for quality has become the mindset of various organizations around the world with the hope that the application of quality management principles will aid in solving organizational problems. Quality has become the prototype for positioning and differentiation; according to which, businesses are expected to deliver and will deliver a unique need-satisfying offering that will enhance organizational performance and success in the global market space. In a classical survey of American businesses, Aaker (1989) reported that reputation for quality was the most frequently mentioned sustainable competitive advantage. More recent studies have also reported that quality has a positive impact on business performance (e.g., Almansour 2012; Carter, Lonial, and Raju 2010; Chin and Sofian 2011; Sousa and Voss 2002; Yusof and Aspinwall 2000). A primary reason fueling the drive for quality is that consumers around the globe are increasingly demanding better quality with lower prices. Russell and Miles (1998) concluded, “Products as varied as automobiles, super-computers and even candy are all subject to the demands of real or perceived quality.” Therefore, quality has become a top competitive priority and a prerequisite for success for many firms operating in the global market place. Total quality is being considered by many researchers to be the essential prescription for survival and profitability (e.g., Kotler and Armstrong 1994). Arab companies are no exception. Since most Arab countries are vying to join World Trade Organization (WTO), quality, Total Quality Management (TQM), is their only guarantee of customer satisfaction and loyalty, strongest shield against fierce international competition, and best course for a sustained competitive advantage.

A multidimensional concept in TQM, and a main issue in the present research, is product quality. Garvin (1984) proposed that companies could compete on a number of product quality dimensions. These are: performance, features, reliability,
conformance, durability, serviceability, aesthetics, and perceived quality. The problem of the present research is to assess the impact of these dimensions on organizational operational (i.e., internal) and economic (i.e., external) performance. First, relevant literature will be reviewed. Second, a study that was conducted for the purpose of this research will be described and results will be analyzed. Finally, conclusions and implications will be presented.

**LITERATURE REVIEW**

Total quality management is a managerial philosophy that aims to provide customers with products and services that satisfy their needs. TQM incorporates the concepts of product quality in addition to process control, quality assurance, and quality improvement. It involves all functional areas (i.e., total company effort) in the firm that embraces a total quality culture and aims to satisfy customer needs at profit (i.e., the marketing concept, Perreault, Cannon, and McCarthy 2012). A marketing-oriented organization must identify customer needs as a starting point to making profits through the creation and delivery of a USP (i.e., unique selling proposition) that affords a sustainable competitive advantage. Between these two ends, different functional areas in the organization add value to the USP. It is through marketing research, consumer needs and desired level of quality are identified and communicated to design; design engineers determine product specifications and transmit supplies’ and parts’ requirements to the purchasing (i.e., a component of the marketing function) and to manufacturing; purchasing selects, contracts and monitors the flow of supplies to manufacturing; manufacturing determines the needed tools and processes and passes this information to production; production workers and supervisors do and control the actual machine setting and production processes; quality control personnel examine products for compliance with specification; and finally, sales, promotion, and distribution components of marketing cap quality by packaging, storing, shipping, and educating consumers of finished goods; they also get feedback regarding consumer’s satisfaction. Figure 1 (See Appendix) illustrates the product development stages from conception to the delivery of a need-satisfying offer.

<table>
<thead>
<tr>
<th>Quality dimension / Product attribute</th>
<th>Functional area responsible for attribute</th>
<th>Type of attribute</th>
<th>Type of value for customer added by attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>Marketing</td>
<td>Search</td>
<td>Extrinsic</td>
</tr>
<tr>
<td>Features</td>
<td>Design Engineers</td>
<td>Search</td>
<td>Extrinsic</td>
</tr>
<tr>
<td>Conformance</td>
<td>Quality Control</td>
<td>Search</td>
<td>Extrinsic</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>Marketing</td>
<td>Search</td>
<td>Extrinsic</td>
</tr>
<tr>
<td>Durability</td>
<td>Purchasing (Marketing)</td>
<td>Experience</td>
<td>Intrinsic</td>
</tr>
<tr>
<td>Serviceability</td>
<td>Production</td>
<td>Experience</td>
<td>Intrinsic</td>
</tr>
<tr>
<td>Reliability</td>
<td>Manufacturing</td>
<td>Experience</td>
<td>Intrinsic</td>
</tr>
<tr>
<td>Perceived Quality</td>
<td>Sales and Distribution (Marketing)</td>
<td>Experience</td>
<td>Intrinsic</td>
</tr>
</tbody>
</table>

The Meaning of Quality: Although quality is widely accepted as a competitive priority for businesses, researchers have not agreed on a universally accepted definition for the quality concept (e.g., Sebastianelli and Tamimi 2002). Quality seems to be a subjective concept that carries different meanings for different people looking from different vantage points. Academics, consultants, and industries proposed a myriad of definitions. Juran (1989) describes quality as “fitness for use,” Deming (1982) stresses that top management “must satisfy customer needs,” and Crosby (1979) defines quality as “conformance to [customer] requirements. Different approaches to defining quality reflect two central issues: customer needs and the need-satisfying marketing offer. Kotler (1984) stressed that quality “must be perceived by customers and that “it must start with customer needs and end with customer perceptions. Interpreting customer perceptions of quality requires that marketers take “the customer point of view” in delivering quality solutions to customer problems. Hauser and Clausing (1988) stressed that “to assure that customers perceive products to be of high quality, manufacturers must deploy the voice of the customer throughout design, engineering, manufacturing, and distribution. These viewpoints, as compatible as they are with the different definitional approaches put forward by researchers (see Garvin, 1984) lead to the conviction that marketers should evaluate their market offerings from the customer’s perspective and learn that quality gains can best be accomplished through satisfying customers. However, a brief analysis of the World ISO certification revealed that Turkey, which as a neighboring country to the Arab World, has more interest in total quality, as exemplified by the number of companies with ISO certificates, than all 21 Arab countries (The ISO Survey of Certificates, 2008). This fact indicates that some Arab managers are not working hard enough to satisfy their customers, are not adopting the marketing concept, and are unfamiliar with market orientation.

Value for Customers: Although the quality concept is a common gist between all functional areas in an organization, different functions hold different perceptions of what quality is (see figure 1). In a seminal paper, Garvin (1984) encouraged managers...
to reify quality and proposed “eight critical dimensions of product quality” as a “framework for strategic analysis. These dimensions are:

1. **Performance**: the primary operating characteristics of the product.
2. **Features**: special supplements to the primary operating characteristics of the product.
3. **Conformance**: the degree to which the product’s design and operating characteristics meet predetermined standards.
4. **Aesthetics**: how the product looks, feels, sounds, smells, or tastes.
5. **Durability**: the amount of usage the product offers before it must be replaced.
6. **Serviceability**: the speed, courtesy, and competence of service people and the speed and ease of repair of the product.
7. **Reliability**: the probability of the product failure within a specified time frame.
8. **Perceived quality**: quality as seen by the customer inferred from the marketer’s reputation and image.

When these dimensions are juxtaposed with business functions that are shown in the proposed "product development cycle" shown in figure 1, each of these dimensions can be associated with one of the adding-value functional areas in the organization. Drawing from Nelson (1970), these dimensions can also be identified as either search (i.e., can be ascertained by consumers before buying) or experience attributes (i.e., can be ascertained by consumers only after buying) of the product and whether they provide extrinsic (i.e., can be felt before buying) or intrinsic value (i.e., can be felt only after buying) for customers; see a summary of the proposed relationships in Table 1. Search attributes that add extrinsic value to the product are: performance and aesthetics which are prescribed by marketing to satisfy consumer needs; features which are determined by design engineers in order to deliver the required benefits; conformance to specifications which is checked by quality control people in order to make sure that the product delivers what has been promised by the marketer. Experience attributes that add intrinsic value to the product are: reliability which is determined by manufacturing through building a product that each time it works as expected; durability which is determined by the quality of supplies and materials; serviceability which is the focus of the production through perfectly integrating parts and components within acceptable tolerances; and perceived quality which is the emphasis of sales and distribution by helping to build brand equity and consumer loyalty.

Relationship between Quality Dimensions and Organizational Performance: Businesses adopting the marketing concept and embracing a market orientation culture can no longer escape the strategic issue of quality. Quality within these firms governs the development of product and process designs and directs the choice of features or options for the product. The underlying assumption of top management for including quality in strategic planning processes is that quality leads to profitability, market share, sales growth, and higher return on investment (ROI). One of the important reasons reported by a number of small companies why they have embarked on TQM is “to improve poor company performance” (Shea and Gobeli 1995). Increasing market share, sales growth, and increasing profitability are important concerns, especially for small businesses. Teboul (1991) identified quality as a means of winning market share, enhancing sales and creating barriers to entry. Forker, Vickery, and Droge (1996) reported a strong relationship between quality dimensions and business performance in the furniture industry. More recent, Douglas and Judge, Jr. (2001) reported strong empirical support for a positive relationship between the degree of TQM implementation and organizational (i.e., perceived financial) performance in a hospital setting. Several other studies examined whether or not TQM practices (e.g., quality standards of ISO 9000 series) have a positive effect on organizational performance measures, such as increased product quality, increased productivity, increased customer satisfaction, and increased profitability. Results reported in these studies indicated positive correlations between TQM and organizational performance (e.g., Adam 1994, Ahire 1997; Almansour 2012; Duggiral, Rajendran, and Anantharaman 2008; Hendricks and Singhal 2001; Kaynak 2003). It is expected that improved economic performance in the market in terms of sales, market share, profitability, and ROI (i.e., external performance) should impact the organization’s operational performance (i.e., internal performance). Employees’ tenure, self-esteem, significance of work, and identification with the organization should be high. Other studies (e.g., Yusof and Aspinwall, 2000; Hasan and Kerr 2003) reported that TQM practices increased sales, improved product quality, and improved customer and employee satisfaction, (emphasis added).

With the exception of a limited number of studies using the profit impact of marketing strategies (PIMS) database, product quality in previous research, however, was treated as a dependent variable and a consequence of implementing TQM rather than an independent variable impacting on organizational performance (Adam 1994; Graig and Douglas 1982; Hasan and Kerr 2003; Schoeffler, Buzzell, and Heany 1974). In the present research, product quality dimensions will be treated as independent variables and their impact on organizational performance will be examined. Figure 2 shows the full model of the relationships between
product quality dimensions and organizational performance. The following hypotheses follow directly from the preceding argument:

H1: Product quality dimensions converge into two latent constructs: product extrinsic and product intrinsic value. The first is measured by product performance, features, conformance and aesthetics and the second is measured by product reliability, durability, serviceability, and perceived value.

H2: Organizational performance dimensions converge into two latent constructs: external performance and internal performance. The first is measured by sales, profits, ROI, and market share and the second is measured by employee tenure, job significance, self-esteem, and organizational identification.

H3: Product extrinsic value influences the organizational external performance more than its internal performance.

H4: Product intrinsic value influences the organizational internal performance more than its external performance.

H5: The model shown in figure two as composed from measurement and structural equations fits the sample data.

METHOD

Procedure: Mail addresses, position titles, and names of participating managers were collected from several business print and electronic directories. The research questionnaire, attached to a cover letter explaining the purpose and importance of the present research and requesting the cooperation of recipients, was sent to approximately 700 managers in an Arab country. The letter requested that managers answer all questions, and mail the questionnaire back in a self-addressed and stamped envelope that was included. Managers were also asked to discard the questionnaire if they had ever participated in a similar study with the same researcher. Anonymity of respondents and confidentiality of information were assured by informing respondents that they are not asked to reveal their identities anywhere in the questionnaire and that the collected information will be used solely and only for the purpose of the present research. The questionnaire included three sections. The first included 5-point Likert-type scales for randomly-ordered forty statements about product quality, the second included four questions about the business’s external performance (i.e., financial) and four other questions about the business’s internal performance (i.e., employee satisfaction), the last included four questions about the business’s demographics and one about the managerial level of the respondent. After several contacts over a period of three months, 213 managers returned the instrument of which only 198 were useable; constituting a 30.4% response rate and a 28.3% useable rate.

Scale development and refinement: An extensive review of the literature did not reveal any scale that would be appropriate for measuring product quality dimensions. Some statements, however, were found appropriate for benchmarking managers’ thoughts about what statements would describe these dimensions. A pilot study was conducted with the purpose of gaining insights from managers’ thoughts about what would describe each of the eight dimensions of quality. Seventeen men and women managers were asked in personal interviews to express their views about these dimensions. When a manager had difficulty understanding what a dimension would mean, the researcher helped the manager in understanding its meaning. In total, 97 statements were generated and assigned to the eight dimensions of product quality. Three business professors from different universities were asked to verify whether these assigned statements reflect their respective dimensions and to reassign any statement that they thought would be misplaced. A statement was retained if at least two judges assign it to the same dimension. Statements were then carefully edited, redundant statements were removed, and double or triple-barreled statements were split and if not possible were eliminated entirely. After rigorous editing, only 40 statements (i.e., 5 per dimension) were retained (statements are available upon request). All statements had the desirable properties of being worded into the common language of the ordinary manager and rewritten into positive and negative forms in order to reduce response tendencies. The questionnaire was put in its final form and administered to thirty managers in a nearby industrial complex in their respective work places. Cronbach alphas are all above the cutoff point of 0.5 and ranged for product quality dimensions between 0.59 and 0.87 and for organizational performance between 0.71 and 0.89.

ANALYSES AND RESULTS

A number of multi-stage confirmatory factor analyses using LISREL were performed in order to provide evidence for the above mentioned hypotheses (i.e., whether to reject or accept) and to test the model fit to the sample data. Past research has suggested several goodness-of-fit indices including chi-square ($\chi^2$), delta statistic (δ), goodness-of-fit index (GFI), and root-mean-square residual (RMSR), see Marsh, Balla, McDonald (1988) for a good review of these indices. The chi-square ($\chi^2$) tests the null hypothesis that the hypothesized model fits the sample data against the alternative hypothesis that a model other than the hypothesized one fits the data. A significant $\chi^2$ indicates a misfit between the hypothesized model and the sample data, hence
rejecting the null hypothesis. Delta statistic (δ) refers to the proportion of covariance among all observed variables that a given model can account for. The proposed cutoff value is 0.9 in order to have confidence in the model fit. GFI provides a summary of the residual matrix. As a rule of thumb, GFI should be greater than 0.9 for a good-fitting model. Finally, the larger the RMSR the less is the fit between the model and the sample data. In order to have confidence in the hypothesized model, RMSR should be less than 0.10.

Convergent validity: In order to provide evidence for the first hypothesis, it is essential to show that the eight dimensions of quality converge into two latent constructs (i.e., the theoretical convergence) but not one (i.e., complete convergence), four (i.e., partial convergence) or eight (i.e., no convergence). Therefore four separate analyses were required. In the first analysis, a model of one latent construct (i.e., theoretical convergence) was tested. The test results showed that this model is inconsistent with the sample data. Chi-square was highly significant (χ²₁₀ = 613, p=0.08), delta statistic was low, (δ = 0.132), GFI was low (GFI = 0.670), and RMSQ was high (RMSR = 0.624). In the third analysis, a model of eight latent constructs (i.e., no convergence) measured by the eight dimensions of product quality was tested. Test results showed that this model is also inconsistent with the sample data. Chi-square was highly significant (χ²₁₂ = 978, p=0.10), delta statistic was low, (δ = 0.114), GFI was low (GFI = 0.540), and RMSQ was high (RMSR = 0.499). In the final analysis, a model of two latent constructs (i.e., theoretical convergence) was measured by the eight dimensions of product quality was tested. Test results showed that this model is consistent with sample data. Chi-square was insignificant (χ²₁₇=27, p=0.000), delta statistic was high, (δ = 0.93), GFI was high (GFI = 0.91), and RMSQ was low (RMSR = 0.07). Additionally, phi (φ₂₁), which is equivalent to the correlation between the two theoretical constructs (i.e., extrinsic and intrinsic value of the product) is moderate, φ₂₁ = 0.34. After examining these statistics, it is concluded that the two latent constructs model is consistent with sample data and hypothesis one cannot be rejected (see table 2 for a summary of all tests' statistics).

Table 2: A summary of test statistics

<table>
<thead>
<tr>
<th>Type of validity</th>
<th>Model</th>
<th># of latent constructs</th>
<th>χ²</th>
<th>df</th>
<th>P value</th>
<th>δ</th>
<th>GFI</th>
<th>RMSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convergent validity of product value</td>
<td>Complete convergence</td>
<td>1</td>
<td>378</td>
<td>19</td>
<td>0.01</td>
<td>0.114</td>
<td>0.540</td>
<td>0.499</td>
</tr>
<tr>
<td>variables</td>
<td>Partial convergence</td>
<td>4</td>
<td>613</td>
<td>10</td>
<td>0.08</td>
<td>0.132</td>
<td>0.670</td>
<td>0.624</td>
</tr>
<tr>
<td></td>
<td>No convergence</td>
<td>8</td>
<td>978</td>
<td>12</td>
<td>0.10</td>
<td>0.114</td>
<td>0.540</td>
<td>0.499</td>
</tr>
<tr>
<td></td>
<td>Theoretical convergence</td>
<td>2 (φ₂₁=0.24)</td>
<td>27</td>
<td>17</td>
<td>0.00</td>
<td>0.93</td>
<td>0.91</td>
<td>0.07</td>
</tr>
<tr>
<td>Convergent validity of organizational</td>
<td>Complete convergence</td>
<td>1</td>
<td>517</td>
<td>19</td>
<td>0.05</td>
<td>0.314</td>
<td>0.325</td>
<td>0.318</td>
</tr>
<tr>
<td>performance variables</td>
<td>Partial convergence</td>
<td>4</td>
<td>614</td>
<td>10</td>
<td>0.01</td>
<td>0.512</td>
<td>0.625</td>
<td>0.211</td>
</tr>
<tr>
<td></td>
<td>No convergence</td>
<td>8</td>
<td>893</td>
<td>12</td>
<td>0.01</td>
<td>0.732</td>
<td>0.725</td>
<td>0.343</td>
</tr>
<tr>
<td></td>
<td>Theoretical convergence</td>
<td>2 (φ₂₁=0.27)</td>
<td>16</td>
<td>12</td>
<td>0.00</td>
<td>0.90</td>
<td>0.90</td>
<td>0.09</td>
</tr>
<tr>
<td>Predictive validity of external</td>
<td>Product's intrinsic and</td>
<td>3 (γ₁₁=0.43; γ₁₂</td>
<td>16.9</td>
<td>51</td>
<td>0.01</td>
<td>0.91</td>
<td>0.932</td>
<td>0.052</td>
</tr>
<tr>
<td>performance</td>
<td>extrinsic value</td>
<td>=0.16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Product's extrinsic value</td>
<td>2 (γ₁₁=0.47)</td>
<td>11.3</td>
<td>52</td>
<td>0.00</td>
<td>0.91</td>
<td>0.932</td>
<td>0.050</td>
</tr>
<tr>
<td></td>
<td>Predictive validity of internal</td>
<td>Product's intrinsic and</td>
<td>11.9</td>
<td>51</td>
<td>0.01</td>
<td>0.90</td>
<td>0.90</td>
<td>0.073</td>
</tr>
<tr>
<td>performance</td>
<td>extrinsic value</td>
<td>extrinsic value</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Product's intrinsic value</td>
<td>2 (γ₂₁=0.00)</td>
<td>9.3</td>
<td>52</td>
<td>0.01</td>
<td>0.93</td>
<td>0.92</td>
<td>0.053</td>
</tr>
<tr>
<td></td>
<td>Comprehensive analysis of validity</td>
<td>Product's intrinsic</td>
<td>79.3</td>
<td>97</td>
<td>0.01</td>
<td>0.90</td>
<td>0.91</td>
<td>0.067</td>
</tr>
<tr>
<td>and reliability</td>
<td>and extrinsic value-organizational</td>
<td>and external performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The convergent validity analyses for the second hypothesis were similar to those for the first hypothesis. In that, a model of one latent construct (i.e., complete convergence), another of four latent constructs (i.e., partial convergence), a third of eight latent constructs (i.e., no convergence), and a fourth model of two latent constructs (i.e., theoretical convergence) were tested. The first test produced a significant chi-square (χ²₁₉ = 517, p=0.05), a low delta statistic (δ = 0.314), a low GFI (GFI = 0.325), and high RMSQ (RMSR = 0.318). The second analysis resulted in a significant chi-square (χ²₁₀ = 614, p=0.01), a low delta statistic (δ = 0.518), a low GFI (GFI = 0.625), and high RMSQ (RMSR = 0.211). The third analysis also resulted in a significant chi-square (χ²₁₂ = 893, p=0.01), a low delta statistic (δ = 0.732), a low GFI (GFI = 0.725), and high RMSQ (RMSR = 0.343). Finally, the test
for the theoretical model of two latent constructs produced insignificant chi-square ($\chi^2 = 16.3, p=0.000$), a high delta statistic ($\delta = 0.90$), a high GFI (GFI = 0.90), and low RMSQ (RMSQ = 0.09). Additionally, phi ($\phi$), which is equivalent to the correlation between the two theoretical constructs (i.e., external and internal performance of the organization) is moderate, $\phi = 0.27$, see table 7 for a summary of convergent and predictive validity statistics. It is concluded based on the preceding results that the two latent constructs model cannot be rejected.

**Discriminant validity:** The fact that the eight dimensions of quality converge into two constructs and that the relation between these two constructs is moderate provides enough evidence to the discriminatory power between these two constructs, this also applies to the eight dimensions of organizational performance two-construct model.

**Predictive validity:** The purpose of the predictive validity analyses is to provide evidence that the extrinsic and intrinsic values of the product are related to the organizational external and internal performance in a theoretically predicted means, respectively. The third hypothesis postulates that product extrinsic value predicts organizational external performance better than what the intrinsic value would whereas the forth hypothesis postulates that the product intrinsic value predicts the organizational internal performance better than what the extrinsic value would. Hence, four separate analyses were needed to provide such evidence. In the first analysis, product value constructs as measured by the eight dimensions of product quality were allowed to load freely on a single construct called external performance as measured by sales, profits, ROI, and market share. Test statistics showed that this model is consistent with sample data ($\chi^2 = 16.9, p=0.01$, GFI=0.932, RMSR=0.052, and $\delta = 0.91$). Additionally, Gamma values (i.e., the loadings of the two product value constructs on the external performance construct) were consistent with the predicted direction and magnitude ($\gamma_{11}=0.43, \gamma_{12}=0.16$). In the second analysis, the same model specified in the first analysis was tested with the assumption that there is no relation between the intrinsic value of the product and the external performance of the organization (i.e., $\gamma_{12}=0.00$). Test result showed some improvement in the model fit ($\chi^2 = 11.3, p=0.00$, GFI=0.932, RMSR=0.050, and $\delta = 0.91, \gamma_{11}=0.47$). In the third analysis, the two constructs of product value as measured by the eight dimensions of quality were allowed to load freely on a single construct call internal performance as measured by employee tenure, job satisfaction, self-esteem, and organizational identification. Test results indicated that this model is also consistent with the sample data ($\chi^2 = 11.9, p=0.01$, GFI=0.90, RMSR=0.073, and $\delta = 0.90, \gamma_{21}=0.19, \gamma_{22}=0.47$).

In the fourth analysis, the same model specified in the third analysis was tested with the assumption that there is no relation between the extrinsic value of the product and the internal performance of the organization (i.e., $\gamma_{21}=0.00$). Test result showed some improvement in the model fit ($\chi^2 = 9.3, p=0.01$, GFI=0.92, RMSR=0.053, and $\delta = 0.93, \gamma_{21}=0.49$).

A comprehensive analysis of validity and reliability: In the preceding analyses, several models were prescribed and tested in support of hypotheses H1-H4. Evidence in support of these hypotheses was obtained and none of them was rejected. Hypotheses H5 requires testing the full model shown in figure 2 for convergent, predictive and discriminant validity for observed and latent variables at the same time. This means that this test will be of how much the components of product value load on the observed variables that were used to measure product quality dimensions and of how much the components of product value indicate the components of organizational external and internal performance. In other words, this will be a test of the measurement properties of observed variables (i.e., reliabilities and validities) and purported structural relationships between latent constructs.

Sample data were subjected to a test where the relationships between observed and latent variables were specified exactly as they are depicted in figure 2. The test showed that this model achieved convergent, predictive and discriminant validity, thus hypothesis H5 could not be rejected ($\chi^2 = 79.3, p=0.01$, GFI=0.91, RMSR=0.067, and $\delta = 0.90$). Figure 3 is an exact replica of figure 2 but shows parameter estimates that were produced by the analysis. Because variables in the analysis were standardized, factor loadings are correlations. Reliability estimates for measured variables and structural equations are shown at the bottom of figure 3.

**DISCUSSION AND CONCLUSIONS**

The purpose of the present research was to assess the impact of product’s quality dimensions on organizational performance in some Arab companies. Toward this end, the meaning of total quality management was explicated. With most Arab countries vying to get into WTO agreements with the rest of the world especially industrial nations, Arab companies will probably perish in the face of fierce competition coming from customer satisfaction-experienced conglomerates supplying high quality products and services. As a matter of fact, a cursory look at the performance of fast food, retail, financial services, and even food processing industries reveals that franchised businesses are far more successful in
Arab markets than local businesses. Having noted that, results based on the analysis of the collected data show that Arab companies, either consciously or subconsciously, are doing a satisfactory job in terms of their concern about product quality and organizational performance.

The development of theoretical constructs and of valid and reliable scales of measurement is essential to the advancement of marketing theory and research. Pioneering scholars of marketing thought have always emphasized that the development of marketing as a science is virtually impossible unless theoretical constructs are clearly specified and adequately measured (e.g. Bartels 1951; Converse 1945, Hunt 1976). Toward this end, the functional areas in the organization responsible for each of the eight product quality dimensions are identified in the present research. Additionally, these dimensions are classified according to whether the consumer can form a judgment about product quality before or only after purchase into search or experience attributes and the value these attributes provide to consumers into intrinsic or extrinsic. A process model of the product development stages is proposed where the information, materials, and product flows are specified and the functional responsibility at different stages is delineated (see table 1 and figure 1). Two theoretical constructs representing the expected value of the product’s features, intrinsic and extrinsic, and two other representing the expected performance of the organization, internal and external, were developed. A structural equation model comprised of these four constructs was developed and the proposed relationships were tested (see figure 2). An extensive literature search showed that an appropriate questionnaire for measuring these constructs is lacking. Therefore, special endeavor was devoted toward developing, refining, and testing a psychometrically rigorous scale composed of 40 items that was used in collecting data for this research (see appendix). The scale was found to possess all desirable measurement properties. Reliabilities for the scale items were all found above the cutoff point of 0.50 and ranged between 0.65 and 0.77. In the comprehensive analysis, reliabilities improved and ranged between 0.65 and 0.77 for the product quality items and between 0.71 and 0.79 for the organizational performance items (see figure 3).

Several analyses were performed in order to provide evidence in support of the five hypotheses of convergent, discriminant, and predictive validity of the product value and organizational performance constructs. All hypotheses were supported and none could be rejected. The eight dimensions of product quality converged into two latent constructs as hypothesized, intrinsic and extrinsic value; and the eight dimensions of organizational performance converged into two latent constructs, internal and external performance and test statistics were all significant (see table 2 for test statistics).

The major contribution of this research, in addition to those clarified at the beginning of this discussion, is that it explicates the latent structure of two major psychological constructs, product value and organizational performance, that are of major interest to both researchers and practitioners. For the first time, product quality dimensions that were proposed three decades ago by Garvin (1984) are being explained conceptually and empirically by the intrinsic and extrinsic value customers are expecting to get from them. Additionally, evidence was provided that these values can be seen as antecedents to organizational internal and external performance. The findings of the predictive analysis of this research suggest that the company’s external and internal performance can be improved not only by focusing on product quality as a holistic entity but rather by examining and emphasizing certain elements of product quality. For example, companies that are more interested in sales volume and profitability than in the stability and loyalty of its workforce can emphasize those elements of the product that consumers can easily evaluate before purchase. This could be the case in industries were products are at parity and the cost of hiring, training, retaining or firing labor is minimal as it is the case in part-time labor. Alternatively, if companies are more interested in employee satisfaction and tenure more than sales volume and profitability they can emphasize those elements of the product that consumers can evaluate only after purchase. And this could be the case in monopolies, utilities, and highly technical and clearly differentiated products. However, if companies are concerned about both external and internal performance then they should concentrate on all product quality dimensions that are investigated in this research. This could be the case were the business is a market leader with a highly differentiated product selling at premium and it is not difficult to communicate value to customers. This signifies the importance of certain elements of product quality in achieving certain levels of organizational performance.

Researchers and practitioners alike can examine the impact of product value and organizational performance constructs on specific marketing strategies and orientations. For example, research can address the issue of whether any of these constructs has impact on innovativeness, entrepreneur, or learning orientation. It also may incorporate product value and organizational performance in more comprehensive nomological networks, such as the market orientation network, and reexamine their role in achieving certain positional advantages and performance outcomes. Researchers can also use the questionnaire that was
developed in the present research in future studies in order to retest its validity and reliability across time and across organizational contexts.

The major limitation of this research is that the statements that were developed to indicate the dimensions of product quality were more general to different categories of products rather than to a specific category. Another limitation is that organizational performance variables were measured by using one question per each variable (e.g., one question about last year's ROI). A third limitation is that data was collected from companies in one Arab country. Future research may address these issues.

REFERENCES


APPENDIX

Marketing function

Other functional areas in the firm

Marketing is responsible for the product's performance, durability, aesthetics, and serviceability

Design is responsible for the product's features, manufacturin for reliability, production for serviceability, and quality control for conformance

Figure 1: Product development stages and the different functional areas responsible for product quality dimensions
Figure 2. Full model of relationships between product quality and business performance

Legend:
X1=performance; x2=features; x3=conformance; x4=aesthetics; x5=reliability; x6=durability; x7=serviceability; x8=perceived quality
Y1= sales; y2=profits; y3=ROI; y4=market share; y5=employee tenure; y6=job significance; y7= self-esteem; y8= organizational identification
ξ1=extrinsic value; ξ2=intrinsic value; η1=external performance; η2=internal performance;
λ11(x)-λ41(x) = loadings of the latent variable ξ1 "extrinsic value" on measured variables x1-x4
λ52(x)-λ82(x) = loadings of the latent variable ξ2 "intrinsic value" on measured variables x5-x8
λ11(y)-λ41(y) = loadings of the latent variable η1 "external performance" on measured variables y1-y4
λ52(y)-λ82(y) = loadings of the latent variable η2 "internal performance" on measured variables y5-y8
γ11 and γ21 = effect of extrinsic value on external and internal performance, respectively
γ12 and γ22 = effect of intrinsic value on external and internal performance, respectively
β21 and β12 = reciprocal effect of external and internal performance on each other
φ21 = correlation between extrinsic and intrinsic value; δ1–δ8,ε1–ε8; ζ1–ζ2 = error terms
Product items | X1 | X2 | X3 | X4 | X5 | X6 | X7 | X8 \\
---|---|---|---|---|---|---|---|---
Reliabilities | 0.77 | 0.75 | 0.73 | 0.75 | 0.68 | 0.76 | 0.71 | 0.65 \\
Total coefficient of determination for X variables = 1.000

Performance items | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 \\
---|---|---|---|---|---|---|---|---
reliabilities | 0.79 | 0.74 | 0.77 | 0.75 | 0.71 | 0.74 | 0.73 | 0.78 \\
Total coefficient of determination for Y variables = 0.937

Structural equations | \( \eta_1 \) | \( \eta_2 \) \\
---|---|---|---|---|---|---|---|---
Reliabilities | 0.522 | 0.518 \\
Total coefficient of determination for the structural equations=0.447