



THE POSSIBILITY OF APPLYING GREEN QUALITY CONSTRUCTIONS: A FIELD STUDY IN THE GENERAL COMPANY FOR ELECTRICAL AND ELECTRONIC INDUSTRIES / BAGHDAD - AL-WAZIRIYAH

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Article history:	Abstract:
Received: August 3 rd 2022 Accepted: September 3 rd 2022 Published: October 6 th 2022	The problem of the study was the absence of a knowledge product about the impact of spreading the green quality function in Iraqi companies or others, especially in the field of electrical and electronic industries, and this indicates the existence of a knowledge gap. The current study aims to test the possibility of applying the deployment of the green quality function in the company under study, as an attempt to fill the knowledge gap in explaining the nature of the relationship through a survey of the opinions of a group of individuals working in the company under study. To achieve this goal, the current study concluded that the deployment of the green quality function works to transform the needs of customers into engineering standards for design and production and successfully integrate the ideas of green energy and green environment in the process of producing the green product according to customer demand, through its basic dimensions (environment, quality, cost, reliability, service, response).

Keywords: spreading the green quality function.

INTRODUCTION

In recent years, industrial organizations have begun to face increasing pressure from stakeholders to consider the impact of their operations on the environment in general. To benefit from renewable energy resources, in addition to increasing customer awareness. Where local and international regulations force organizations to conserve the environment as well as take into account the impact of their operations on natural resources, and the technology of spreading the green quality function is sold, this has led to Change the perspectives of customers and encourage them to choose the products or services of organizations that cause the least harm to the environment. Through this, it seemed that organizations should apply the technology of spreading the green quality function not only in their products and services, but also in their activities where they do not harm the environment. The green practices of organizations It has great potential to address environmental issues.

The first topic: Research methodology: The research methodology includes the problem, importance and objectives, as well as the research hypothesis and my agencies:

First: The research problem: The research problem lies in defining the General Company for Electrical and Electronic Industries (Baghdad - Al-Waziriya) with the

concept of publishing the green quality function and the advantages that the company obtains through the application of the concept. The green quality function in the General Company for Electrical and Electronic Industries)

Second: The importance of the research: The importance of the research comes through the researcher's attempt to provide a theoretical framework that demonstrates the possibility of applying the deployment of the green quality function in the General Company for Electrical and Electronic Industries (Baghdad - Al-Waziriya), as most Iraqi organizations need to comply with international requirements by providing green friendly products. The environment, through a contemporary concept of the extent to which the deployment of the green quality function can be implemented in the company.

Third: Research objectives: By defining the research problem and its importance, it is possible to determine the research objective, which is mainly focused on identifying the level of availability of the publication of the green quality function in the General Company for Electrical and Electronic Industries (Baghdad - Al-Waziriya) from the point of view of a number of respondents.

Fourth: Research hypothesis: The research formulates its hypothesis from its presented questions and in line with its objectives according to a main hypothesis that



(the management of the company under study seeks to apply the deployment of the green quality function and its dimensions in the company)

The second topic: the theoretical side

First: Developing the Green Quality Function Deployment

Environmental issues were introduced into the development of green new products in the 1990s, so that the QFD was converted to the Green Quality Function Deployment, taking into account the environmental factor. Green Quality Function Deployment is a powerful tool for developing environmentally friendly products. Green Quality Function Deployment has been used. For the first time to establish a relationship between the developer, the customer and the environmental product itself, the Green Quality Function Deployment was used to analyze products based on the criteria that customers value most along with green design guidelines in product development (Wang, et al., 2010) The Green Quality Function Deployment was developed Quality Function Deployment in 2002 by researchers (Wong& Juniper)

Second: The concept of spreading the Green Quality Function Deployment

The QFD quality function is one of the most important tools of total quality management, as it is used to link two basic variables in a controlled manner, namely, the voice of the customer and the processes and practices performed by the organization, that is, how to translate customer requirements into technical specifications that the organization achieves through the processes and practices that it performs. Yugi Akao (1990:3) describes Quality Function Deployment (QFD) as a method for developing targeted quality design for the purpose of meeting customer requirements for a product. This is done by translating their requirements into technical specifications while defining key areas for quality assurance during the production stage. It is clear from the above that the dissemination of the quality function is a way to transform customer needs into engineering standards in design and production from 1990 to 2009, and when environmental issues were introduced to develop environmentally friendly products as well as increase public awareness of environmental protection by product designers, which led to the development of a tool New design by integrating QFD Quality Function Deployment Quality QFD with Life Cycle Assessment (LCA) and Life Cycle Costing (LCC) that takes into consideration the environmental factor, which is the deployment of the Green Quality Function Deployment. With the publication of the quality function (QFD) as well as taking into account environmental issues (Zhang, et al., 1999:1075)).

Second: The importance of spreading the green quality function

The deployment of the Green Quality Function

Deployment works to determine the customer's voice for the desired standards, and then it is translated into technical specifications to know information about the level of importance for those needs. The environment and costs (Rinawati et al., 2018: 1).

The importance of spreading the Green Quality Function Deployment can be clarified according to the studies referred to above, as in the following points:

1. Green Quality Function Deployment transforms customer needs into engineering standards for design and production
2. It successfully integrates the ideas of green energy and green environment into the process of producing green products according to customer demand
3. The Green Quality Function Deployment contributes to the formulation of design plans
4. The Green Quality Function Deployment defines the customer's voice and then it is translated into technical specifications to know the information about the level of importance in those needs
5. The Green Quality Function Deployment addresses environmental issues and develops a way to combine green product concepts with customer needs and desires, the environment and costs.

Second: The dimensions of the Green Quality Function Deployment

For the purpose of identifying the dimensions adopted by this study as indicators to measure the impact of spreading the green quality function on the development of green products through green transformational leadership, its contents must be clarified. Reliability, Service, Response), the concept of each dimension is clarified separately as follows:

1. Environment:

(Smeets & Weterings, 1999) defined environmental performance as an expression of results with measures for the management of the organization that reflect its environmental aspects. Both (Brush and Dehimi, 2011) describe it as a holistic activity that reflects the organization's ability to use its capabilities according to certain criteria set based on a long-term plan, and Barajas emphasized , et al., 2007: 22) that the environment is a relationship between a series of services that are linked to each other in terms of quality and production capacity, which are considered a mirror of the organization's performance

The Quality:

Quality refers to a set of indicators that determine the extent to which the product is distinguished in terms of its quality compared to competitors (Slack, et al., 2004: 777). The quality indicator also provides performance results through green design alternatives to the concept of quality, as this dimension determines the extent to which customer requirements are met in The concept of green



products, these dimensions we obtain through the House of Quality. As (Stoner & Werner, 1993:43) referred to the quality dimension as a measure of the quality of the company's services that aims to eliminate all failures that the customer expects

Cost:

It means reducing the cost of producing or designing the product. Therefore, offering products to customers by the organization at the lowest prices relative to competitors' prices leads to an increase in its sales (Reid & Sanders, 2002:28), as defined by (Olsson, 2009:7) as the amount of actual amounts spent. for a specific activity.

4. Reliability:

Refers to the possibility of product failure during a specified period of time, as this dimension corresponds to the philosophy of quality is excellence.

According to studies conducted in British and Japanese organizations, the product that has reliability will be of a higher level of quality (Al-Khaqani, 2020: 81).

5. Service:

The service sector has increased significantly after many countries shifted from manufacturing economies to service economies, because service is a multi-directional and multi-dimensional activity. Some researchers and writers have different opinions about the definition of

Defining the concept of service and the definitions of the concept of service are as follows: Service is: any act or performance provided by one party to another party whose essence is intangible and does not result in ownership and that its production is linked to material or immaterial production (Kotler, 1997)

Response:

It is the willingness, willingness and ability of the organization to provide the appropriate service and at the speed that achieves the benefit of that service. (Al-Khatib, 2018: 27) (Filho & Saes, 2013: 1177) describes the response as a model for competition on the basis of time by achieving high quality and product diversity and reducing Costs to meet customer requirements and satisfy them

The third topic: the field side

Confirmatory factor analysis of the green quality function deployment variable:

Relying on the Structural Equation Modeling method, the conformity quality criteria were tested for the independent variable, green quality function deployment consisting of six sub-dimensions (environment, quality, cost, reliability, service, response), as in Figure (1) below.

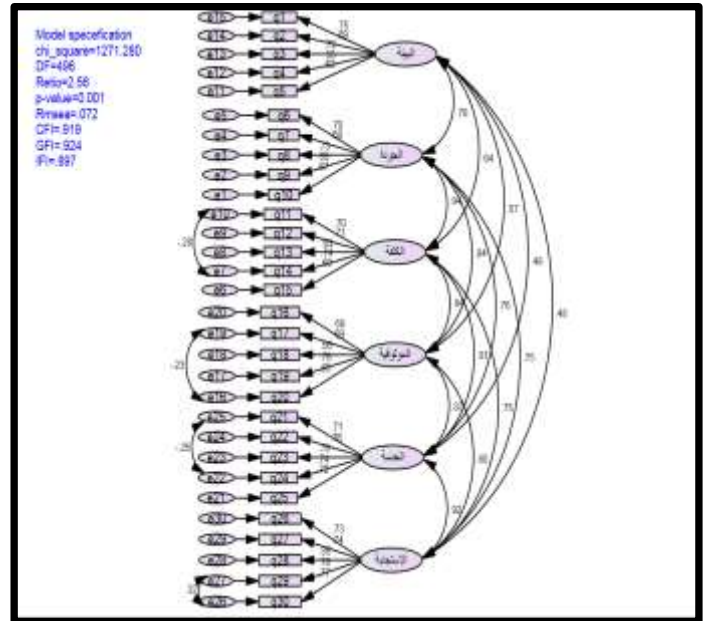


Figure (15) confirmatory factor analysis of the green quality function deployment variable
 Source: Amos v. output. 24

As shown in Figure (15) above, the indicators of quality of conformance standards (Rmse = 0.072; p-value = 0.001; GFI = 0.924; CFI = 0.919; IFI = 0.897) are all within the limits of acceptability where all the assessments of the scale items were acceptable when The C.R is greater than 1.96 (Hair et al., 2010, as in Table 1):

Table (9) estimates of the green quality function deployment variable

Item	Estimate	S.E.	C.R.	P	Cronbach's α
q5	.629	.101	9.880	***	.934
q4	.556	.101	9.880	***	
q3	.717	.099	12.025	***	
q2	.694	.099	11.745	***	
q1	.754	.101	12.438	***	
q10	.670	.094	13.255	***	.91
q9	.681	.090	13.055	***	
q8	.726	.081	13.806	***	
q7	.693	.079	13.262	***	
q6	.698	.087	13.345	***	.826
q15	.687	.093	14.055	***	
q14	.744	.082	14.572	***	
q13	.633	.075	12.582	***	
q12	.708	.071	13.978	***	
q11	.700	.076	13.760	***	.846
q20	.649	.101	9.880	***	
q19	.756	.091	13.696	***	
q18	.562	.072	10.694	***	
q17	.690	.088	11.506	***	
q16	.687	.073	12.681	***	.852
q25	.717	.068	14.560	***	
q24	.744	.067	15.204	***	



q23	.793	.072	16.310	***	.843
q22	.762	.071	15.676	***	
q21	.713	.068	14.560	***	
q30	.765	.201	5.880	***	
q29	.782	.052	21.012	***	
q28	.853	.060	19.017	***	
q27	.743	.055	16.236	***	
q26	.727	.058	15.831	***	

Source: SPSS output. V.24 & Amos v. 24
First, descriptive statistics

Descriptive statistics deals with the apparent form of the data without studying the relationships or the correlation between them, i.e. the data are clearly tabulated and summarized and can be used to describe the sample's views towards the study variables, their dimensions and paragraphs without recognizing the relationship between the variables from the viewpoint of that sample. The five-point Likert scale was used for the purpose of evaluating the responses and opinions of the study sample, whose values range from (1-5). To achieve the purpose of this statistic, two of the most common and important tools in this field were used, namely the arithmetic mean, which shows the extent or degree of agreement or disagreement of the opinions of the study sample on the existence of the phenomenon on the ground, and the standard deviation, which indicates the extent of dispersion and deviation of opinions. About that phenomenon about its arithmetic mean. In addition, the relative importance tool was used for the purpose of identifying the order of the paragraphs of the dimension or the dimensions of the variable by dividing the arithmetic mean by the maximum degree of the scale which is (5). The responses are evaluated according to the arithmetic mean according to the following: 1 to 1.49 "strongly disagree", 1.50 to 2.49 "disagree", 2.5 to 3.49 "neutral", 3.5 to 4.49 "agree" and 4.50 to 5 "strongly agree". The results of descriptive statistics will be discussed first for the paragraphs, then the variables and dimensions as follows:

Descriptive statistical analysis of green quality function deployment:

This variable was represented by (30) items distributed over six dimensions, the arithmetic mean (mean) and standard deviation (S.D) were used for the purpose of evaluating the responses of the current study sample. Table No. (1) shows the results obtained, as follows

Table (1) Descriptive statistical analysis of the green quality function deployment variable

Paragraphs	mean	S.D
Our company participates in activities that contribute to the protection of the environment	3.5263	1.13955

The company donates to support activities aimed at protecting the environment	3.5263	.80892
Allocate a portion of the company's profits to take into account environmental standards	3.0861	1.07070
We reduce environmental pollution by recycling waste	3.4402	1.21983
We try to use materials that are less harmful to the environment	3.6746	1.19670
The environment	3.4507	.92773
The company has a clear and reliable quality policy	3.9522	.81901
The company seeks to make the specifications of the products conform to the standards set for it constantly	3.7225	1.15172
The company is keen to reduce defective rates in the completion of its activities to the lowest possible level compared to competitors	4.0957	.62821
The company is characterized by increasing the qualitative awareness of quality among its employees	3.6029	1.16032
The company seeks to improve the quality of its products by improving the means and requirements for carrying out its activities	3.7081	1.11199
the quality	3.8163	.81826
The company's raw materials costs are low compared to competitors.	3.4880	.77899
The actual unit cost of production in the company is close to its planned cost.	3.8804	.81456
The company is concerned with reducing costs whenever possible while performing its various activities.	3.9665	.75564
The company is interested in reducing indirect industrial costs on an ongoing basis.	3.7464	.81912
The company emphasizes the need to constantly reduce administrative and marketing costs	3.9904	.87701
Cost	3.8144	.56635
The company achieves high reliability of product performance throughout its production and marketing period	4.1053	.74577



The company's products have characteristics such as completeness, stability, performance and sensitivity as desirable to ensure reliability	4.0861	.77351
The company works to compensate for the dissatisfaction of customers with the results associated with wastage and wasted effort when it is not dealt with correctly for the first time	3.7656	.91859
Our products have low failure rate compared to competitors' products	3.8038	.84055
Customer responses and complaints are almost non-existent due to the durability of our products	3.7656	.84214
Reliability	3.9053	.59584
The company has the authority to provide after-sales services	4.1579	.85987
The company has a higher design modularity to obtain the possibility of high service and the product of high design units	3.8804	.81456
The company provides opinion and easy solutions to problems related to products with customers	3.9569	.78634
The company follows a policy of continuous improvement in all its products to suit environmental and social factors.	3.9952	.82914
The company manufactures products that address ethical, social, environmental and economic issues	4.0239	.85732
the service	4.0029	.60367
The company is constantly reducing production lead times.	3.9234	.76829
The company focuses its efforts on meeting deadlines.	4.0957	.71416
The company has the ability to quickly adjust and adjust production capacity.	3.9713	.79611
The company has the ability to make rapid changes in product design.	3.7464	.88676
The company has the ability to quickly resolve customer complaints.	3.7847	.90222
response	3.9043	.59938
Green Quality Job Posting	3.145	1.235

Source: SPSS v.24 results after reorganization

It is clear from the results of the above table (1) that the

arithmetic mean spreading the organizational green quality function amounted to (3.145) and with a general standard deviation of (1.235), which indicates that the data are homogeneous, and since the general arithmetic mean is higher than the hypothetical mean of (3), the The publication of the green quality function is considered widespread in the General Company for Electrical and Electronic Industries (Baghdad - Al-Waziriyah), according to the respondents' point of view. This indicates that their opinions pay great attention to this variable, and it is by nature The situation reflected positively to some extent on their answers. In general, these results indicate that the General Company for Electrical and Electronic Industries (Baghdad - Al-Waziriyah) has to adapt to the basic environmental changes that are characterized by uncertainty and speed of change. Its activities and that the company follows a policy of continuous improvement in all its products to suit environmental and social factors.

CONCLUSIONS

1. Statistical analysis of the results of the study shows that the general arithmetic mean is higher than the hypothetical mean for the publication of the green quality function. This indicates that the data are homogeneous, the level of dissemination of the green quality function is widespread in the company under study according to the respondents' point of view.

2. Deploying the green quality function transforms customer needs into engineering standards for design and production and successfully integrates the ideas of green energy and green environment in the process of producing green product according to customer demand through its basic dimensions (environment, quality, cost, reliability, service, response) .

RECOMMENDATIONS

1. The General Company for Electrical and Electronic Industries can work to increase cooperation and coordination between its divisions in order to achieve the company's goals, especially for environmental goals.

2. In order to develop the company's performance and improve its competitive position, it is preferable for the company to introduce environmental modifications to its green products and to apply the technology of spreading the green quality function widely.

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