THE IMPACT OF VALUE ENGINEERING TECHNOLOGY ON CUSTOMER RELATIONSHIP QUALITY

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ABSTRACT:
The current research aims at highlighting the impact of value engineering technology on the quality of customer relations to a sample of the members of the Board of Directors and the staff in the Quality Department, the Production Department, and the quality department. The marketing department of the Rubber Industries Company/Diwaniya Tire Laboratory in Diwaniya City which has a strength of (100) workers was returned (93) for use and analysis resulting in a response rate (%93). The value Engineering Technology variable has three main dimensions: Preparation for value Research, value Research, and Post-value Research, and the Customer relationship Quality variable has three main dimensions: Trust, satisfaction, and commitment. The research adopted resolution as a basic measurement tool for collecting data that was used to test the main and sub-research hypotheses by using a number of statistical methods, most notably (simple Pearson correlation coefficient, regression analysis, and path analysis) and the results of the current research have proven most of the hypotheses to be valid. The results showed a correlation between value engineering technology and Customer relationship Quality.

INTRODUCTION:
Today, the environment is highly competitive. Therefore, organizations of all kinds seek to offer the best product/service to customers or communities, as the customer's acceptance of the products and services of the organization is the core of their survival in the business world. So the main challenge facing

organizations is how to deliver products and services at the level that pleases and pleases their customers and the quality required by them, while the cost of producing the product is low. Therefore, the great competition witnessed by the local product due to the invasion of foreign products to local markets resulting from the orientation toward the free market at a time when our organizations were not ready to cope with this change. Private industrial organizations are required to offer products that are highly competitive in terms of quality and price in order to ensure that they remain on the market. Cost is one of the main constraints to achieving this, as organizations have to eliminate inefficient traditional methods and adopt modern technologies that enable them to achieve high quality products while reducing costs and time to ensure market excellence and continuity. One of the most important of these new technologies is value Engineering (VE), as this technology has been very successful in most industrial sectors that have been applied in developed countries and organizations like General GE and NASA, and then used in various projects and the service sector worldwide. This tool is characterized by maximization of product value while minimizing unnecessary costs while focusing on quality, reliability and other requirements of customer specifications. The company has been working on a number of new products, such as a product that is not available, because of its inability to meet the needs of customers, which have become more volatile. Therefore, organizations compete to attract and retain as many clients as possible, and this is done through the quality and closer relationship with them. In the context of these challenges, the current research seeks to highlight the role of value engineering in reducing costs, time and product design and its impact on the quality of the customer relationship at the Rubber Industries/Diwaniya Tire Laboratory.

PART ONE: SCIENTIFIC METHODOLOGY OF RESEARCH

First: Research Problem

In the past few years and to this day, organizations have witnessed a period of major change in their operations and markets. Today, competition in the world markets is high, because of the existence of significant contacts and interconnection between world markets and the impact of this on global competition for local markets in our country, Iraq, Especially after the significant opening of the Iraqi markets in recent years through the entry of many and diverse products and various world-wide sources, This has led to the emergence of a problem for local Iraqi products, which is represented by the reduction in the characteristics of the product and the increase in the costs of manufacturing these products, which affects the value of the product from the point of view of the customer. This hope has led to the incapacity of local Iraqi factories to compete with other imported products and to no higher profits.

In our country, Iraq, which has suffered and is still suffering from neglect and many difficulties and challenges. We note that the concepts related to the technology of the dissemination matrix of quality and the technology of value engineering are not adopted and applied in organizations, which leads to the lack of improvement in performance and also the uncontrolled invasion of many Iraqi imported products and the failure to protect the national product, which led to a virtual stoppage of Iraqi factories due to their inability to compete With imported products. This research was therefore designed to identify the challenges facing the industry sector in general and the organization in particular.

In short, the problem of research can be summed up by several questions:

1. Is there any reliability of value engineering technology in the Al Diwaniya Tire Factory?
2. Is there an environment for quality customer relations in the research community?
3. Does value engineering technology affect the Customer relationship Quality at the research organization?

Second: Research Importance

The importance of the research can be determined by the following:

1. The research highlights the importance of using modern variables of interest to all organizations, whether industrial or service.
2. Research variables are important at the level of intellectual theorizing and are still an important area of research within the perspective of administrative thinking, so the current research provides a conceptual framework with dimensions for both value engineering and Customer relationship Quality.
3. Due to the scarcity of primary resources and the high costs, which are considered to be one of the fundamentals of competition among organizations, attention has been paid to the technology of value engineering, which in turn reflects on the importance of the research.
4. The current research will help bridge the gap between the reality of the industrial sector in our country, Iraq, and what it should be like the other neighboring countries that have made great strides in this field.
5. We hope that the current research will benefit organizations and factories in our country, Iraq, especially the research organization, in finding an integrated action plan that can be relied upon in determining the way of dealing with the products/services offered and their impact on the quality of the customer's relations.

Third: Research Objectives

The main objective of the research is to indicate or clarify the relationship between the value engineering technique in its phase (preparation for the value research, conducting the value research, after the value research) and its impact on the quality of the customer's relations with their dimensions (trust, satisfaction, commitment), and a set of sub-objectives.

1. How far has value engineering technology been adopted to reduce the costs, time, and resources used in manufacturing?
2. Highlight the importance of value engineering technology and its role in achieving competitive advantage for organizations.
3. Getting acquainted with the interest of the different departments in the Al Diwaniya Tire Laboratory in managing the quality of customer relations.
4. Determining the level and nature of the impact of value engineering on achieving or crystallizing the quality of customer relations.
5. Diagnosing the extent to which workers in Al-Diwaniya Tire Factory offer high value products and services to clients that will reflect on the quality of their relations with them.

Fourth: Hypothetical Research Model

In order to achieve the objectives of the research, hypothesis scheme in Figure 1 was formulated with aim of testing it at the Al-Diwaniya Tire Laboratory in the city of Al-Diwaniya.

The diagram in Figure 1 consists of two main variables, each of which consists of a number of sub-variables, as follows: -
A- Explanatory variable: Value engineering technique consists of three dimensions (preparation for value research, conducting value research, and post-value research).
B. the dependent variable: the quality of the customer relations : it consists of three dimensions (trust, satisfaction, commitment)
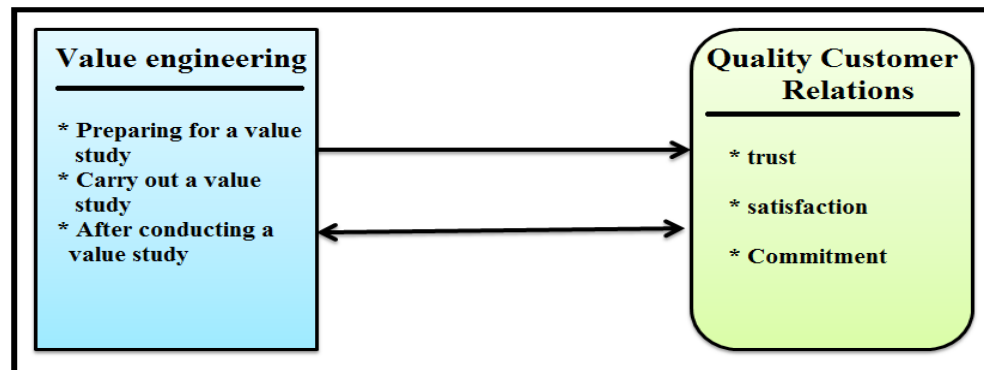

Figure (1) hypothesis diagram of research

Fifth: Research Hypotheses

In order to complete the requirements of the research and with a view to answering its questions, the following hypotheses were put:-

H₁: Tests the connection between value engineering technology and Customer relationship Quality There is a statistically significant correlation between value engineering technology and Customer relationship Quality. The following sub-hypotheses arise from this hypothesis:-
A- there is a statistically significant correlation between the numbers to perform the value research and the quality of the customer's relationships.
B. the existence of a statistically significant correlation between the value research procedure and the quality of the customer relationships.
A statistically significant correlation between post-value research and Customer relationship Quality.
H₂: The presence of an effect of the variable value engineering technology in the variable Customer relationship Quality.

Sixth: Research Standards

The researcher relied on the field research to collect data on the sample by adopting resolution (Appendix 2) as the primary means of collecting data and information because it is the most consistent means of the current research and its dimensions (value engineering technique, quality of customer relations). As shown in table 1. It is pointed out that all variables are of a pentagonal scale (agree, agree, neutral, disagree, disagree, disagree very much).

Table (1) Research variables, paragraphs, and scale

variables		NO.	approved scale
Value engineering	Preparing for a value study	5	(Alkhereibi,2017)
	Carry out a value study	6	
	After conducting a value study	4	
Quality Customer Relations	trust	5	(Clark *et al.*,2017)
	satisfaction	5	Dorai *et al.*,2021)(
	Commitment	5	

PART TWO: THEORETICAL FRAMEWORK

First: Value Engineering Technology

The Concept Of Value Engineering Technology

Value Engineering (VE) is a modern science suited to developing countries in critical economic situations, and is now used for the necessary and important things to ensure an equitable distribution of primary resources. VE is a cost-cutting technique, one of the strategies used by organizations within their competitive environment for competitive advantage, by which all efforts are directed toward the primary goal of reducing the total cost of products or services while maintaining their quality, to ensure growth, survival and sustainability.

The term value engineering (VE) appeared in modern administrative literature in the late 1940s to overcome the difficulty of obtaining certain resources (Gahlan, 2018:5) and the shortage of skilled labor and component parts during World War II, as war led to a scarcity of resources and a shortage of some products. Lawrence miles,Jerry Leftow,and Harry Erlicher were hired   at GE and searched for alternatives, noting that these alternatives often lead to cost reductions or product improvement (Chavan,2013:18).

Lawrence D. miles led GE workers to work toward a goal, combining a number of ideas and techniques to develop a successful methodological approach to value assurance in the product (Torelli, 2011:2). The concept has spread rapidly through the private sector as the potential for significant returns from relatively low investments has been recognized.   This methodology was originally named value Analysis or value Control (Mandelbaum& reed,2006:2).

When GE found that many alternatives offered equal or better performance at lower cost, it launched efforts in 1947 to improve product efficiency through the deliberate and systematic development of lower-cost alternatives, and these efforts were led by the engineer (miles) who formed a team (Mandelbaum *et al.*, 2012:1).

Value Engineering (VE) is a simple yet low-cost way to add value and improve quality (Adnan et al.,2018:527). This is a well-known and widely used process for managing production costs in many industry areas (araszkiewicz, 2020:1). This technology also identifies all possibilities for reducing unnecessary expenditures and other factors that do not meet or exceed investor expectations while ensuring an appropriate level of quality, reliability and functionality (MAHUDIN,2020:10). Value engineering differs from standard cost-cutting methods based on the use of cheaper materials or the abandonment of certain functions in the product, as this reduces the costs

required to implement the project but usually at the expense of quality and reliability (araszkiewicz,2020:1).

Since the introduction of value engineering technology in 1950, it has been used as a major approach in public institutes and private organizations to reduce the time needed for projects. This technology has been widely applied in the construction industry as an inseparable component of construction and development projects and is among the important tools in project management that can be applied as a systematic effort to analyze the main needs of systems, equipment, utilities and programs through minimum cost expenditure (Hamedani, 2015:480).

Value engineering introduced and expanded in some industrial organizations is receiving considerable attention as a new way of reducing costs, which in turn increases the organization's profitability (Marzouk, 2011:596). The cost (VE) is high at the planning stage and decreases as the project progresses, thus contributing to a significant increase in value (AMRI&Marey,2021:611 Al). In addition, it has demonstrated its effectiveness in R&D as well as in the design stages and has been applied not only to equipment but also to office processes and procedures and organizational methods (Marzouk, 2011:596).

Value engineering is the key to automatic innovation/invention using artificial intelligence because it provides an explanation of how to solve complex technological problems by identifying the functions required and then thinking about different ways to perform this function. But at first it has to overcome its main criticism that it focuses only on cost reduction so that the potential for this can be seen (Woodhead et al., 2022:5).

In addition to the concept of value engineering, terms such as value Management (VM) or value Analysis (VA) are also used. Although these terms look very similar and are often used as synonyms, the administrative literature points to differences in the definition of these terms. Value management is the broader issue and consists of three components (araszkiewicz,2020:1):-

1. The value mapping used to reflect the concept of a project .
2. value engineering covers the investment design and implementation phase only.
3. value control is applied at each stage of the project lifecycle, the aim of which is to monitor the effectiveness of value management.
Researchers view the definition of value Engineering Technology (VE) from different angles, Table 2 presents the views of some researchers that are presented about the definition of value Engineering Technology.

Table (2) the opinions of some researchers on the concept of value engineering technology.

NO.	Researcher& year	Definition
1	Phyo&Cho,2014:2022_2023)(	An analytical methodology research carried out by a multidisciplinary team of professionals in a given project to reduce the most likely implementation costs.
2	(Behncke *et al*.,2014:783)	A systematic process to achieve basic functions with the lowest life cycle costs and consistent with the required performance, reliability, quality and safety of a given product.
3	Pratiwi,2014:166)(	The American value Engineers Association's definition of VE is a systematic application of recognized technologies that define the function of a product or service, establish a monetary value for that function and provide the necessary function with a high degree of reliability and at least total cost.
4	(Silka,2019:152)	A type of activity that is necessary at all stages of project implementation and is primarily used to justify investment in construction.
5	(Amran *et al*.,2019:11)	Systematic, structured and multidisciplinary decision-making process.
6	(Mahyuddin,2020:11)	Management technology that uses a structured approach that is at the same time an organized effort to analyze and identify non-core functions and eliminate unhelpful costs so that the required functionality is achieved at the lowest total cost while maintaining quality and reliability.
7	(Setti *et al*.,2021:4)	A quantitative multidisciplinary approach focusing on improving the effectiveness and efficiency of the functions of a product, process or organization.

Based on the above and based on the point of view of Phio&Cho,2014) and (Setti et al.,2021) value engineering (VE) can be defined as an effective technology in reducing unnecessary costs and time needed to produce goods and deliver services is used in organizations to increase their profits and requires a multidisciplinary team to reduce costs and improve value.

Stages Of Value Engineering Technology

The value Engineering (VE) process, commonly referred to as a work plan, involves a number of activities carried out sequentially during the VE study, including its own workshop, and there are some of the phases implemented in the value Engineering Action Plan (Wicaksono,2016:9).the overall assessment procedures are adopted by breaking up action plans The engineering of value to three levels is:. Preparing for a value study and conducting a value study, after a value study (Coleman, 1992;Johnson,2012 Younker,2003;Johnson, 2014; Ahmed,2016)

Preparing To Perform Value Study

The pre-study or preparation phase covers information gathering and goal setting (Ahmed,2016:43). It consists of scheduling participants in the study and tasks, reviewing documents with the necessary basic information about the project, and compiling project data into a cost model. Information on the design, construction and operation of the Organization was important as it constituted the basis for comparison of the study's efforts. Information on funding, project planning, operational requirements, systems assessments, cost, Production Schedule etc. (Johnson,2012:6&Johnson,2014:7)

Performing Value Study

A work plan or value study consists of some phases. The value study includes the recommended value architecture used by the VE team during the workshop.

Post-Value Study: -

The post-value study phase of the draft VE study and the final preparation of the value engineering study report, discussions and decision meetings with staff (Johnson,2014:8) the value study post activity may also include working to address budget adjustment, If necessary, if an increase in the budget is needed to support one or more proposals, these proposals cannot be adopted for implementation until the budget increase has been approved. In such a case, the final implementation summary report cannot be completed until action has been taken on the request for a budget increase (Coleman, 1992:7).

Second: Customer Relationship Quality

Concept Of Customer Relationship Quality

The concept of Customer relationship Quality originated from theory and research in the area of relationship marketing, with the ultimate goal being to foster already strong relationships and transform indifferent customers into loyal customers (Rauyruen&Miller, 2007:23). In today's highly competitive environment characterized by rapidly changing customer needs, developing and maintaining strong, sustainable and beneficial relationships with customers lies at the heart of the contemporary marketing model and is a great competitive advantage for organizations (Athanasopoulou&Giovanis, 2015:332). The concept of quality customer relations is based on performance and partnership between the two parties, the customers and the service provider, so the customer's trust is needed to provide a clear description of any information related to the organization and to ensure that the relationship between the customer and the service provider is working well. The quality of customer relationships becomes the important variable to understand and implement (RAHARDJA et al., 2021:5). Other researchers emphasize that the quality of the relationship refers to the nature of the relationship between the customer and the organization, which will lead to a flexible association between them (Van Tender et al.,2018:6).

Others believe that long-term customer retention leads to greater profitability (Rauyruen & Miller, 2007:22). The organization maintains the customer throughout its life, so the quality of the relationship indicates how well the organization meets the needs of the customer, who is seen as a major source of competitiveness for the organization (Van Tender et al., 2018:6).

The quality of the service provided can be said to be the result of customer perceptions of the situations that were formed by the long-term comprehensive performance assessment, which states that customer satisfaction is a response in the form of satisfaction feelings arising from the experience of consuming a product or service. Or a small part of that experience while retaining customers is an attempt to focus the organization's marketing efforts on its current customer base (Tauriana&Arisani, 2012:452). According to Ellis et al., 2018:1, the organization's relationship with its customers is one of the most important business relationships since high-quality customer exchange helps create a supportive environment for the customer's needs and values. It may also have implications for their satisfaction and well-being as well, the quality of the relationship is a strategic approach focused on strengthening customer relationships (ALVE,2019:188). Others consider that the high quality relationship indicates that the customer believes in the future performance of the organization because the previous level of performance has met their desires and expectations (Wu&cheng, 2018:45). Although many researchers have

widely pointed out what constitutes quality of relationship in the literature, there is no uniform definition of quality of customer relationships (Izogo, 2016:3).

Researchers view the definition of quality of customer relationships from different angles and table 3 illustrates the views of some researchers on defining quality of relationship with the customer.

Table (3) the views of some researchers on defining the quality of customer relationships

NO.	Researcher& year	Definition
1	CHAKRABARTY *et al*.,2008:3	The relationship between the service provider and the customer involves high levels of trust and commitment, good communication, cultural similarity, and balanced interconnection between entities in the service partnership.
2	Alrubaiee,2012:8	(Levitt,1986) defines it as a package of intangible value that increases products or services and leads to the expected exchange between buyers and sellers.
3	Al-alak,2014:2	The overall positive perception of the customer's relationship with the service provider formed through several reciprocal links.
4	Mullins *et al*.,2014:6	The combined power of the customer's confidence in, and their own interest in, an organization.
5	Osobajo& Moore,2017:4	Widely used to describe the validity of a relationship based on the assessment of the parties within that relationship.
6	Tajvidi *et al*.,2021:7	The quality of a customer relationship (Palmatier *et al*.,2006) is defined as the intensity and inconsistency of the relationship.

Based on the above views of researchers and based on the point of view (TRAN,2020) & (Smith,1998), quality of customer relationships can be defined as a high-ranking structure that reflects the high positive relationship that occurs between the organization and its customers by providing high quality products and services to the customer who feels a concern and partner with This organization.

Dimensions Of Customer Relationship Quality

The quality of the relationship forms the basis for many studies that model the quality of customer relationships either using two dimensions or including additional dimensions, some researchers believe that the dimensions of the quality of the relationship are focused on satisfaction and confidence as first-order dimensions, while others add commitment as another dimension of the quality of customer relationships (Viira et al., 2008:8).

Trust

Trust is a dimension widely addressed in administrative literature, defined by it (Holmlund&törnroos, 1997:305) as a coherent process of continuous and mutual interaction between at least two actors. Trust, on the other hand, refers to one party that wants to rely on each other's actions and the situation is oriented toward the future (AKA et al. 2016:186). In the same context (GR'egoire & Fisher, 2006:33), it defined it as the confidence of customers that the organization is reliable and reliable to serve them well. It also refers to the reputation and level of interest of the organization, as approved by the customer, and includes an objective reputation and represents the customer's confidence in the quality and reliability of the services provided by the organization (Santouridis&Veraki, 2017:1125). This is a particularly important aspect in the context of services, and these benefits can contribute to the efficiency of the relationship by reducing transaction costs, which then help to strengthen the commitment to the relationship if the customer trusts the Organization They are likely to have a positive association (Beatson., *et al* 2014:10).

Satisfaction

found that (Murray & Howat, 2002:25) customer satisfaction seems prevalent for the possibility of customers recommending product/service to others, Customers find a higher quality of product or service that will meet or exceed customers' expectations and desires of the product/service and customers are likely to be more willing to sustain purchasing from the organization. They talk to customers about their positive experience with the organization, recommend relatives and friends buy from this site, stay loyal to it, and increase their work with it. Customer satisfaction is defined as the post-purchase evaluation of product quality and service in the light of pre-purchase expectations. Therefore, satisfaction is the result of the customer's assessment of the quality of his/her experience in meeting his/her quality expectations (Peltonen,2016: 19) It is also a post-consumer valuation by customers based on perceived value, quality and price (Ishaq et al., 2014: 90) It is also a feeling that arises as a result of the evaluation of the experience of using a

product or service (Kusnadi, 2010:176). Relationship satisfaction is defined as the client's emotional state resulting from the comprehensive assessment of his or her relationship with the seller (De Wulf, 2001:36). Also the overall emotional assessment of the performance of the service/product provider (Tajvidi et al, 2021:7). It is also the brief psychological state resulting from the combination of emotion caused by uncertain expectations of consumer feelings about past consumption experience (Surjit,2019:784), as well as being happy or disappointed for someone occurring after comparing performance or results from some of the products contemplated towards hoped-for offers or results (Sunarti & Suryani, 2019:160).

Commitment

The commitment refers to the customer's motivation to stay with the organization (Aka et al, 2016:186). The majority of the literature is commitment-building as a critical element of relationship quality (Alves,2019:189), and commitment often stems from the emotional pleasure associated with a relationship partner and the development of admiration within it (Barry & Doney, 2011:308). Commitment is also an emotional link that ultimately elevates customers' propensity to spread positive messages about the organization/product. (Lam & Wong, 2020: 97) Furthermore, the customer's constant desire to continue the relationship is accompanied by the willingness of this customer to make efforts to maintain it. This definition adds the existence of consistency between both the desire to continue the relationship and the willingness to make targeted efforts to maintain this relationship. And although the desire for continuity is a necessary but not all requirement for a relationship obligation because it may be driven simply by usual signals or market restrictions (De Wulf, 2001:37). The obligation is also seen as building a pivotal relationship preceding the client's relational behaviour, and a recent study found that the obligation is closely linked to customer loyalty, assuming that the obligation directly affects positive oral speech behaviour (Hennig-Thurau et al., 2002:237).

THIRD PART: APPLICATION FRAMEWORK

First: Descriptive Statistics of Study Variables

Value Engineering Technology

Preparation of Value Study Procedure

The above results show that the computational average of the first paragraph WPP1 was 1.62 with a standard deviation value of 0.706, a difference factor of 43 and a relative significance of 32. The computational medium of the second paragraph WPP2 was 1.81 with a standard deviation value of 0.837, a difference factor of 46 and a relative significance of 36. The computational

medium of the third paragraph WPP3 was 1.73 with a standard deviation value of 0.782, a difference factor of 45 and a relative significance of 35. Whereas the fourth paragraph's arithmetic average WPP4 was 1.96 with a standard deviation value of 0.846, a difference factor of 43 and a relative significance of 39. The fifth paragraph's arithmetic average WPP5 was 1.83 with a standard deviation value of 0.904, a difference factor of 49 and a relative significance of 37.

Table No. (4) General statistics of the preparation dimension of the WPP value study procedure

NO.	mean	S.D	C.V	%
WPP1	1.62	0.706	43	32
WPP2	1.81	0.837	46	36
WPP3	1.73	0.782	45	35
WPP4	1.96	0.846	43	39
WPP5	1.83	0.904	49	37
WPP	1.79	0.654	37	36

Value Study Procedure

The above results show that the computational average of the first paragraph WP1 was 1.69 with a standard deviation value of 0.642, a difference factor of 38 and a relative significance of 34. The computational average for the second paragraph WP2 was 1.66 with a standard deviation value of 0.827, a 50 difference factor and a relative significance of 33. The computational medium of the third paragraph WP3 was 1.84 with a standard deviation value of 0.924, a 50-difference factor and a relative significance of 37. The fourth paragraph calculator WP4 was 1.87 with a standard deviation value of 0.912, a difference factor of 49 and a relative importance of 37. The computational medium of the fifth paragraph WP5 was 1.80, with a standard deviation of 0.774, a difference factor of 43 and a relative significance of 36. The calculus of the sixth paragraph WP6 was 1.74 with a standard deviation value of 0.820, a difference factor of 47 and a relative significance of 35.

Table No. (5) General Statistics Dimension WP Value Study

NO.	mean	S.D	C.V	%
WP1	1.69	0.642	38	34
WP2	1.66	0.827	50	33
WP3	1.84	0.924	50	37
WP4	1.87	0.912	49	37
WP5	1.80	0.774	43	36
WP6	1.74	0.820	47	35
WP	1.77	0.600	34	35

After Value Study

The above results show that the arithmetic medium of the first paragraph PWP1 was 2.05 with a standard deviation value of 1.004, a difference factor of 49 and a relative significance of 41. The computational average for the second paragraph PWP2 was 1.85 with a standard deviation value of 0.872, a difference factor of 47 and a relative significance of 37. The computational medium of the third paragraph PWP3 was 1.98 with a standard deviation value of 0.967, a difference factor of 49 and a relative significance of 40. The computational medium of the fourth paragraph PWP4 was 1.82 with a standard deviation value of 0.779, a difference factor of 43 and a relative significance of 36.

Table No. (6) General statistics of the dimension after PWP value study

NO.	mean	S.D	C.V	%
PWP1	2.05	1.004	49	41
PWP2	1.85	0.872	47	37
PWP3	1.98	0.967	49	40
PWP4	1.82	0.779	43	36
PWP	1.92	0.767	40	38

Quality Customer Relations

Trust

The above results show that the computational medium of the first paragraph T1 was 1.53 with a standard deviation value of 0.842 and a difference factor of 55 and a relative significance of 31. The computational medium of the second paragraph T2 was 1.66 with a standard deviation value of 0.840, a difference factor of 51 and a relative significance of 33. The computational medium of the third paragraph T3 was 1.61 with a standard deviation value of 0.738, a difference factor of 46 and a relative significance of 32. The computational average for the fourth paragraph T4 was 1.68 with a standard deviation value of 0.874, a 52 difference factor and a 34 relative significance. The computational average for fifth paragraph T5 was 1.63, with a standard deviation of 0.749, a difference factor of 36 and a relative significance of 33.

Table No. (7) General statistics of the **Trust** dimension

NO.	mean	S.D	C.V	%
T1	1.53	0.842	55	31
T2	1.66	0.840	51	33
T3	1.61	0.738	46	32
T4	1.68	0.874	52	34

T5	1.63	0.749	46	33
T	1.62	0.701	43	32

Satisfaction

The results above show that the computational medium of the first paragraph S1 was 1.67 with a standard deviation value of 0.785 and a difference factor of 47 and a relative significance of 33. The computational medium of the second paragraph S2 was 1.77 with a standard deviation value of 0.934, a difference factor of 53 and a relative significance of 35. The computational medium of the third paragraph S3 was 1.55 with a standard deviation value of 0.773, a 50 difference factor and a relative significance of 31. The computational medium of the fourth paragraph S4 was 1.71 with a standard deviation value of 0.842, a difference factor of 49 and a relative significance of 34. The computational average for the fifth paragraph S5 was 1.56 with a standard deviation value of 0.840, a difference factor of 54 and a relative significance of 31.

Table No. (8) General statistics of the satisfaction dimension

NO.	mean	S.D	C.V	%
S1	1.67	0.785	47	33
S2	1.77	0.934	53	35
S3	1.55	0.773	50	31
S4	1.71	0.842	49	34
S5	1.56	0.840	54	31
S	1.65	0.670	41	33

Commitment

The results above show that the computational medium of the first paragraph L1 was 1.63 with a standard deviation value of 0.894 and a difference factor of 55 and a relative significance of 33. The computational average for the second paragraph L2 was 1.63 with a standard deviation value of 0.791, a difference factor of 48 and a relative significance of 33. The computational medium of the third paragraph L3 was 1.74 with a standard deviation value of 0.820, a difference factor of 47 and a relative significance of 33. The computational medium of the fourth paragraph L4 was 1.87 with a standard deviation value of 0.875, a difference factor of 47 and a relative significance of 37. The computational average for the fifth paragraph L5 was 1.74 with a standard deviation value of 0.883, a difference factor of 51 and a relative significance of 35. The overall calculus of the L dimension was 1.72 with a standard deviation value of 0.715, a difference factor of 41 and a relative significance of 34.

Table No. (9) General statistics of the commitment dimension

S NO.	mean	S.D	C.V	%
e L1	1.63	0.894	55	33
c L2	1.63	0.791	48	33
o L3	1.74	0.820	47	35
n L4	1.87	0.875	47	37
d L5	1.74	0.883	51	35
. L	1.72	0.715	41	34

Persistence and sincerity of questionnaire

One of the conditions to be met when collecting questionnaire data is that it is consistent and valid. This can be achieved through the creation of alpha-Cronbach's transactions, valued between zero and the correct one. The value close to the right one indicates greater credibility and vice versa. When the credibility and consistency of the questionnaire is achieved, we accept the questionnaire and adopt its results. The researcher has found the values of Alfa Cronbach's and the results are included in the following table:

Table No. (10) Alpha - Cronbach coefficients

dimension	No.	Alpha - Cronbach
WPP	5	0.86
WP	6	0.83
PWP	4	0.86
TVE	**15**	**0.93**
T	5	0.92
S	5	0.86
L	5	0.89
QGR	**15**	**0.95**

Third: Test hypotheses

Hypothesis Of Association

Test the correlation between value engineering technology and the quality of customer relations

The linkages between the two variables have been calculated value engineering technique and the quality of the customer's relationships depending on the statistical program (SPSS vr. 20). The results are shown in the following table:

Table No. (11) correlation between and removal of variables

	WPP	WP	PWP	TVE
T	$.659^{**}$	$.566^{**}$	$.680^{**}$	$.706^{**}$
S	$.756^{**}$	$.617^{**}$	$.695^{**}$	$.763^{**}$
L	$.770^{**}$	$.643^{**}$	$.727^{**}$	$.792^{**}$
QGR	$.794^{**}$	$.664^{**}$	$.764^{**}$	$.822^{**}$
**. Correlation is significant at the 0.01 level (2-tailed).				
N=93				

The results of the table above indicate the possibility of testing the hypotheses relating to associations that have been divided into two types of hypotheses: main and subspecies. The main hypothesis can be worded as follows:

A statistically significant correlation between value engineering technology and the quality of customer relationships The results show that the value of the correlation between the two variables was 0.822, which is a solitary and moral value below the 5% indication level between the variable value engineering technique and the quality of the customer's relationships.

The sub-hypotheses test the correlation between the dimensions of the variable value engineering technique and the quality of the customer's relationships and can be formulated as follows:

H$_{1-1}$: It is the hypothesis that tests the existence or lack of correlation between the preparation dimension of the WPP value study procedure and the variable quality of the customer's relationships and can be worded as follows:

A statistically significant correlation between the preparation of the WPP value study procedure and the quality of the customer's relationships The results show that the value of the correlation between the two variables was 0.794, which is a solitary and moral value below the 5% indicative level between the preparation of the WPP value study procedure and the quality of the customer's relationship.

H$_{1-2}$: It is the hypothesis that tests the existence or lack of correlation between the dimension of the WP value study and the variable quality of the customer's relationships and can be formulated as follows:

A statistically significant correlation between the conduct of the WP value study and the quality of the customer's relationships

The results show that the value of the correlation between the two variables was 0.664, which is a solitary and moral value below the 5% indicative level between the WP value study and the quality of the customer's relationships.

H$_{1-3}$: It is the hypothesis that tests the existence or lack of correlation between the post-PWP dimension and the changing quality of the customer's relationships and can be worded as follows:

A statistically significant correlation between the post-PWP value study and the quality of the customer's relationships The results show that the value of the correlation between the two variables was 0.764, which is a solitary and moral value below the 5% indication level between the post-PWP value study and the quality of the customer's relationships.

Impact Hypothesis

The results of table (12) shown in figure (2) indicate a direct moral expulsion effect of the variable value engineering technique in the variable The quality of the customer's relationships under an indicative level (5%) value engineering technology contributed to the explanation (0.822) of issues limiting the ability of the Diwaniyah tyre factory to pay attention to the quality of the customer's relationships, which indicates that an increase in value engineering by one unit increases the quality of the customer's relationships by (0.822) and a critical value of 13.857), which is a statistically significant value. Exclude variable quality diffusion matrix.
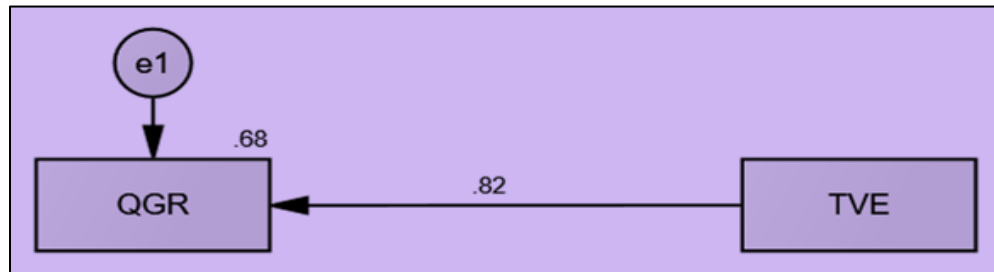
Form (2) Proposed model for structural modelling equation

Table 13. Impact of value engineering technology on the quality of customer's relationships

path			estimate	S.E	C.R	Sig.
TVE	--->	**QGR**	.822	.062	13.857	0.00

PART FOUR: CONCLUSIONS AND RECOMMENDATIONS

First: Conclusions

1. There is a statistically significant correlation between value engineering technology and the quality of customer relationships, which means that the factory has the appropriate skills and information to enhance its potential in providing services to actors.

2. Having a moral impact of value engineering technology on the quality of customer relationships, which means improving the factory's ability to develop training plans that contribute to the development of workers in order to address performance problems at work.

3. The factory is keen to design appropriate training programs in order to improve the work in all its departments, which demonstrates the factory's observance of scheduling in the design of training programs

4. The factory is keen to develop the knowledge of workers' skills in order to implement the training plan thoroughly.

5. The factory is keen to promote creativity and work skills in areas where it is vulnerable.

Second: Recommendations

1) The factory must ensure that working individuals acquire new knowledge and managerial and organizational skills in order to enhance their creative aspect

2) The factory should assess the results of the training programmes after the implementation of each step of the training plans.

3) The factory should be keen to enhance its knowledge and skills in exploiting the resources and opportunities available to it.

4) The factory needs to undertake a detailed analysis of all employees' skills in order to identify their weaknesses and work on appropriate solutions to the weaknesses identified

5) The factory should encourage workers to share knowledge and learn new skills that contribute to the development of their potential in developing training plans that contribute to the factory's development.

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