



## INTEGRATION OF QUALITY FUNCTION DEPLOYMENT, TARGET COSTING AND VALUE ENGINEERING TO IMPROVE PRODUCT VALUE (APPLIED RESEARCH IN THE STATE COMPANY FOR TEXTILE INDUSTRIES/ HILLA TEXTILE FACTORY)

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Article history:	Abstract:
<b>Received:</b> 1 <sup>st</sup> February 2022 <b>Accepted:</b> 1 <sup>st</sup> March 2022 <b>Published:</b> 11 <sup>th</sup> April 2022	The research aims to demonstrate the impact of the publication of the quality function, target cost and value engineering in improving the value of the product. As the quality function publication tool works to identify the requirements of customers and arrange them according to priorities, the target cost works to determine the costs of competing products and the value engineering works to determine the cost of each function of the product and to know the job that adds value and the job that does not add value to remove the job that does not add value to the customer, and the researcher reached To a number of conclusions, the most important of which is the presence of untapped human energies and resources, as well as the decrease in the company's production volume is mainly due to the technological obsolescence of the machines that have passed many years and have not been replaced.

**Keywords:** Quality Function Deployment, Target Costing, Value Engineering

### INTRODUCTION

The contemporary business environment has witnessed major changes in the recent period, as technology has developed and the working methods of economic units have developed with it, and this change has been accompanied by an evolution in the requirements of customers, as their needs have increased and characterized by diversity on products with specifications and prices that satisfy their desires. Accordingly, the old traditional cost systems have become unable to meet these desires, and the economic units tended to adopt techniques that are compatible with these multiple changes for customers, and among these techniques and tools is the dissemination of the quality function that seeks to know and analyze the requirements and desires of customers, and the target cost technique that works on the market study. Determining the price is based on the level of prices in the markets and not as it is known through the cost incurred by the economic unit in addition to a certain profit margin. The value-adding and trying to cancel or reduce it according to the customer's requirements that were identified in the publication of the quality function, and the permissible limit of the cost that is determined by the target cost.

Research problem

The competition in the markets and the development taking place in the modern manufacturing environment led to a continuous

change in the tastes of customers, which generated a conceptual gap between the economic unit and the customer that negatively affected the industrial sector in general and the industrial sector in Iraq in particular. By providing designs and prices that do not comply with the requirements of customers, because the company does not adopt modern technologies that take into account the response to the requirements and desires of customers. Therefore, the research problem is:

Not taking into consideration the requirements and desires of customers when designing the product.

The high costs of the jobs performed by the product in exchange for performance.

The lack of a balance between costs and functions, as there is an exaggeration in the design by the designers at the expense of the total and functional costs actually required.

Importance of Research

The importance of research comes from the following aspects:

Providing a theoretical framework on the concept of quality function deployment, target costing, and value engineering.

Keeping abreast of developments in the business environment by enhancing the role of strategic management accounting techniques in providing products according to customer requirements.



## RESEARCH OBJECTIVES

The research aims is:

Using clean quality publishing data to bridge the conceptual gap between designers and clients to create a reasonable balance between different levels of client needs.

Increasing the awareness and awareness of administrative leaders of the importance of applying the quality function publication, target cost and value engineering to reduce cost and enhance product value.

### Research Hypothesis

Research is based on the fundamental Hypotheses that "Employing quality function deployment, target costing and value engineering contributes to reducing the cost of the product and improving its value".

### Research limits:

Search limits include a range of temporal and spatial limits:

Spatial boundaries: The General Company for Textile Industries/ Hilla Textile Factory was chosen.

Time limits: The data and reports of the economic unit in question have been approved for the year 2021.

The Theatrical Framework for Research Approach  
Quality Function Deployment

#### 2.1.1 Genesis and concept Approach

According to (Akao, 1997: 1-2)The Quality Function Deployment technology was established in Japan in the late 1960s, during an era when Japanese industries detached from the post-World War II situation of product development by imitation and copying and moved to product development based on originality, QFD was born into this environment as a method or concept for developing a new product Under the TQC umbrella, the subtitle "Approach to TQC" has been added to the Quality Function publication, and this is the first research on the topic of QFD to clarify this relationship.

The basic principles of the quality function were known 40 years ago, but the origins of the publication of the quality function have not been accurately determined in terms of time, although the model used appeared in the United States and the Western world no later than 1986 AD when the first article appeared under the name Quality Progress Take up its history, published by the American Society for Quality Control (ASQC) (Zhang, et, al; 1999:82).

The prerequisite for the success of the product is its ability to provide the greatest benefits to customers by fulfilling their desires, So the requirements of customers are required in the design and there are different ways and techniques for reporting the requirements of customers and converting them into a

technical definition, such as the way to deploy the quality function (Kelety, 2006:148). Stages of 2.1.2.building a quality function deployment

Deploying the quality function within four stages through a sequential sequence, as follows: (Singh & Kumer, 2014:16)

Product Planning: At this stage, the customer's requirements are translated into technical or engineering requirements

Part Deployment: Convert technical or engineering requirements into parts properties, identify product components that meet customer requirements.

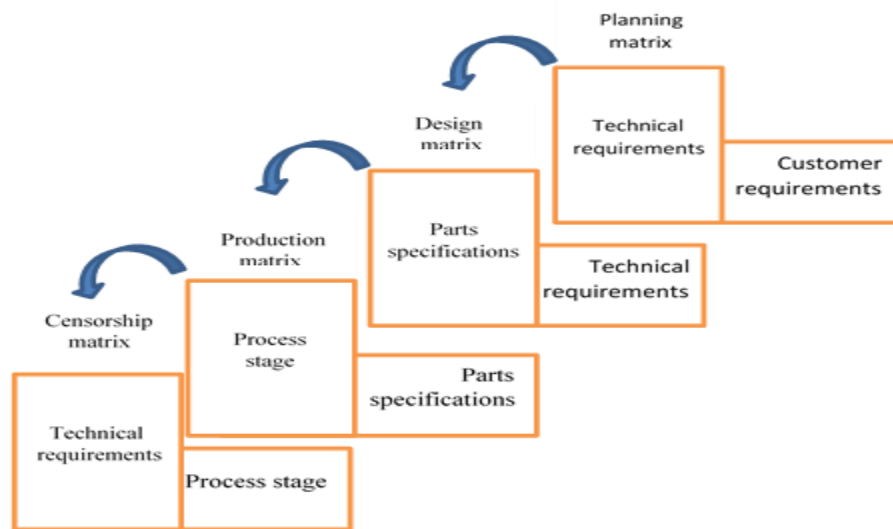
Process Planning: Determining the processes related to the components of the product that were specified according to the engineering requirements.

Production Planning: Fulfilling development standards through major production processes.

Although the specifics of quality function deployment may vary between different variables, But in general the common principle, Determining the customer's requirements for a product or service according to their relative importance and linking them to design characteristics that translate those requirements in an applied manner within reality, This principle can be continued by making hows in the later stage and that some users and experienced have up to four matrices linked in this way if there is a need to make engineering or practical trade-offs at a later stage, enables the interconnected houses to determine the impact on the requirements of customers(Slack, et al.2010:126).

The following figure shows the stages of deployment of the quality function:

Figure 1: Quality House Sequence



Source: Jariri, F., & ZEGORDI, S. (2008). Quality function deployment, value engineering and target costing, an integrated framework in design cost management: a mathematical programming approach.

During the product planning, creation, assembly and management process, the four stages provide automated transmission and distribution of the customer's voice, using real phrases. The main focus of the functional aspect of the study is on a comprehensive analysis of the first step of QFD development represented by First Quality Home.

### 2.1.3 House of Quality

The Quality House is part of the QFD implementation process, which is a matrix used for planning purposes that conveys the interaction between customer preferences and how the unit attempts to satisfy those desires being a graphical tool for describing the relationship between customer wants and the product. (Heizer & Render, 2014:196).

### 2.1.4 Steps to build a quality house

To build a quality house, there are basic steps  
 Determine what the customer wants. (What do customers want in this product)?  
 Learn how to satisfy customers. (Determining the characteristics of the specifics of the product and the features or attributes of the product).  
 Connecting the customer to the product house (building the relationship matrix).  
 Determining the relationships between the product and the company, there is a great relationship between requirements and production.  
 Development of materiality ratings by the customer in the evaluations of importance and weights for the matrix relationships.

Evaluate the competing products and whether the competing products meet what the customer wants.

Determine the desired characteristics of the technology, your performance, and the performance of the competitor against these qualities.

### 2.2. Target Costing Technique

According to the researcher's point of view, the developments that took place in the contemporary business environment, the most prominent of which is competition, have played an effective and significant role in making economic units reconsider thinking about traditional systems and approaches that do not perform the required purpose sufficiently, especially in the field of cost and administrative accounting, due to insufficient And the limited ability of these systems to provide information that can achieve success, and of course the world is a changing and unstable world, as it is characterized by rapid development, especially after the emergence of technology that prompted companies and economic units to need modern and reliable systems to keep pace with development and achieve success. Required, and the target cost is one of the modern technologies in this field, as it focuses on designing products that meet the desires, requirements and needs of the customer in many respects, the required quality and the right price that the customer is able to buy at this price. High in order to achieve a satisfactory level of profitability and in order to ensure development, survival and growth.



Target costing is a method produced directly through highly competitive markets in many industries, and the target cost determines the desired cost of the product on the basis of a certain competitive price so that the product earns the desired profit, and as a result the cost is determined according to the specified price, as the company that uses the target cost must adopt Often drastic measures to reduce costs or redesign the product or manufacturing process to meet the market price and remain profitable, as the target cost forces the company to become more competitive in the business environment (Blocher, 2019: 14), It has been defined as a technique that aims to manage cost at the stage of product planning and design by setting the target cost for a specific product or service by subtracting the target profit margin from the target selling price (Drury, 2018: 618), Or it is the estimated long-term cost of each product or service that enables the economic unit to achieve the target operating income when selling at the target price (Horngren et al, 2015: 523).

According to (Berry, 2005: 206-207) and (Slater, 2010:26-27), the principles of this technology can be limited to six main principles, which are as follows:

Price - leads the cost: that is, the target cost is usually directed from within the market and according to the equation below: -

Target cost = market price - target profit margin

According (Datar & Rajan, 2018: 525-526) there are three factors that affect the target price. Customers influence the demand for the product. The customer is looking for quality. As for competitors, this is due to the economic units, their knowledge and willingness to reduce prices without being exposed to loss, and this is being done. By knowing their capabilities, techniques and operational strategies, and the last influencing factor is costs, and this is due to the efficient work of managing economic units to achieve the targeted reduction in them.

Focus design: In order to obtain high-quality products and achieve cost reduction, the company must work on engineering changes before starting the production process, and this can be achieved because the economic unit has an opportunity to achieve control over its costs during the stage Planning for product design.

focus on customer: Focusing on the customer's point of view and understanding his needs and requirements is very important, and because the target cost is market-oriented, the customer's point of view must be taken into account at all stages of the value chain. The

following figure shows the factors affecting customer satisfaction.

Cross-functional involvement: The process of coordinating all functions will lead to success in the application of target costing, and this coordination takes place between sub-units and different departments in economic units such as manufacturing engineering, design, finance, marketing and suppliers as well.

value – chain involvement: Developing the relationship between the components of the value chain, most notably suppliers, distributors and traders, leads to reducing costs and creating value for the customer. Improving the relationship between them is the basis for achieving the successful application of this technology. The following figure illustrates the value chain model.

life – cycle Orientation: When determining the target cost, it is necessary to take into account all the cost elements that are related to the life cycle of the product from the point of view of both the producer and the consumer, starting from the first stages of product planning, through research and development, and ending with the stage of after-sales services.

When economic units choose the target cost technology in managing their costs, they naturally seek to raise their competitive efficiency in the business environment, so they need to apply this technology accurately, as many writers indicated that the target cost is applied through the following steps:

Determining long-term sales and profit goals: The Company must form a long-term plan that helps support the specific goals of management that should be achieved in order to achieve market requirements (slater, 2010: 35).

Structuring production lines to obtain maximum profitability: to ensure the satisfaction of potential customers and avoid confusing them, because there are many products that cause confusion to the customer because they do not match his desires. Therefore, production lines should be structured in a way that ensures the satisfaction of desires (slater, 2010:35).

Determining the target price: the target price is defined as a price that is estimated for the product or service that the potential customer is willing to pay for it. The estimate of this price depends on understanding and knowing the value that the customer is expected to get from the product, as companies work on market analysis and research and knowledge The characteristics of the product that the



customer desires, as well as the prices that they can pay for it (Al-Hajjaj, 2003: 986).

Determine target Profit: According to (Kee & Matherly, 2006: 290-291) and (Edmonds, et al., 2008: 108), the process of determining target profits depends on the objectives and policy of the economic unit in planning medium and long-term profits until the appropriate identification of what is required to be targeted from Profit requires adequate knowledge of the product itself and the competing products.

Determining the target cost: In this step, the target cost is reached by applying the following equation: (wild & Shaw, 2010: 49).

Target cost = selling price - target profit margin

Achieving the target cost reduction using modern technologies: After completing the above steps, the stage of achieving the target reduction begins. Therefore, there is a set of techniques that can be used to reach the required reduction, including continuous improvement technique and value engineering, which will be relied upon to achieve the targeted reduction in the practical aspect of search.

### 2.3. Value Engineering

Value engineering is a systematic assessment of all aspects of the value chain, with the aim of reducing costs and achieving a level of quality that satisfies customers. The number of components, testing hours, and all non-value adding costs, moreover, it reduces rework, meaning that value engineering reduces the machine hours required to manufacture the product, and the main concept in value engineering is the realization that the end product is not the product, but the functions and how well these are delivered functions to the customer, as every major manufacturer uses value engineering early in their product development process (Datar, et al, 2018: 552-554), As defined by *Weil*, a systematic approach that identifies and selects the lowest life-cycle cost options in design, materials and processes that achieve the desired level of performance, reliability and customer satisfaction, and seeks to eliminate unnecessary costs (Weil, 2005: 256).

Many researchers and writers have referred to the steps or stages of implementing value engineering, including (Al-Anzi, et al., 2017: 2311), who indicated that the implementation of value engineering takes place according to six stages, as follows:

1- Job Analysis Phase: Analyze the project to understand and clarify the specific functions and features.

2- Creative stage: generating ideas about all viable methods and alternatives to perform the required capabilities.

3- Evaluation stage: collecting ideas to select viable ideas for development in an alternative design.

4- Development phase: identifying and aggregating opportunities for design and cost improvement.

5- Presentation stage: providing cost advice to stakeholders and customers.

Implementation stage: implementing the recommendation of the value team and follow-up.

2.4. Synthesis of marketing analysis data within a common application of QFD, TC, VE.

Target costing focuses on cost and to a lesser extent on customer requirements. As a result, cost is seen as an economic umbrella while customer requirements are seen as binding competitive constraints. Customer requirements, product functions, and cost can be viewed as three vital components of the costing process. Hence, tools such as QFD and VE play a very vital role in supporting the target costing process by maintaining functional requirements and customer satisfaction (Gandhinathan, et al., 2004: 1004), As the collection and analysis of information related to the products of the economic unit and the extent of the need for it in the market is by understanding the desires, needs and expectations of customers and determining the characteristics of the product that will motivate the customer towards making the decision to buy as well as studying the competitors by studying the characteristics and advantages of competing products, as the marketing analysis data It is useful in the integration of target cost, value engineering, and quality function deployment to help identify the components of the product that should be targeted for re-design or to reduce the cost. The catalog with its tool represented by QFD, and these steps are as follows: (Blocher, 2019: 535-536)

Determining the characteristics of the customer's purchase of this product and how to arrange these characteristics, or as indicated by (slack, et al., 2010, 126) that this step consists in determining the list of competitive factors that customers find important and these components are recorded by a scale consisting of certain degrees indicating these The grades refer to the level of competitive performance of the current product and competing products.

Determining the components of the product and the manufacturing cost of each component.

Determining how each component contributes to customer satisfaction, according to (slack, et al., 2010,



126) that in this step, the different dimensions of the design that will activate the requirements of customers within the product or service are determined.

The final step is to determine the significance index for each component, by integrating the information from steps 1 and 3 and then comparing this with the cost information in step 2.

### 3. The Field Study

Employing qfd and target costing to reduce cost and improve product value in the General Company for Textile Industries, Hilla Textile Factory.

#### QFD Tool Application

The first steps begin with defining the problem, and after studying the field and asking questions to the employees of the laboratory in the Engineering Affairs Department and the Marketing Department, answers were obtained, through which, the problem was identified, which lies in the weakness of the company paid to the customer, so the marketing analysis data

will be used within the first matrix QFD is the integration of the customer's voice into product development, as the focus is on collecting information about customers and competitors, in a systematic, continuous and actual manner, and thus predictions are more realistic, and this makes QFD an aggregate tool that contributes more effectively to product improvement efforts, and disposes according to the following steps:

Determining the customer's requirements: As a first step, we start by defining the requirements and desires of the customers, as we make a list of the basic needs and desires that the customer determines when choosing the product of the military uniform. Owners of shops specialized in the sale of military uniforms, and on this basis a set of basic requirements and desires were selected that should be satisfied in the product of the suit, and Figure (1) presents these requirements as follows:-

Table 1: Main customer requirements

customer requirements								
military cloth durability	color fastness	weather resistance	Measurements	design aesthetic	health aspect	price	The smoothness of the military cloth	Ease of cleaning

The relative importance of the customer's requirements: This step is to determine the relative importance of the customer's desires and requirements and according to what was stated in the questionnaire form that was distributed to the target group who are affiliated with the Ministry of Defense, as the five-point Likert scale was adopted to calculate the total sample frequencies.

Table 2: Contents of the questionnaire related to customer needs

	customer requirements	Fifth Likert Scale				
		Not very important	not important	kind of	important	very important
		1	2	3	4	5
1	military cloth durability	80	10	8	2	0
2	color fastness	60	32	6	2	0
3	weather resistance	68	26	4	2	0
4	Measurements	70	20	4	2	4
5	design aesthetic	44	36	16	4	0
6	health aspect	60	18	20	2	0
7	price	62	18	16	2	2
8	The smoothness of the military cloth	42	30	18	0	10
9	Ease of cleaning	52	24	20	2	2

After the questionnaire has been unloaded in the above table, the relative importance of these requirements for the customer is now determined according to the following table



Table 3: The relative importance of customer requirements

	customer requirements	Fifth Likert Scale					Total	Relative importance
		very important	important	kind of	not important	Not very important		
		5	4	3	2	1		
1	military cloth durability	400	40	24	0	2	466	%11.84
2	color fastness	300	128	18	0	2	448	%11.38
3	weather resistance	340	104	12	0	2	458	%11.64
4	Measurements	350	80	12	8	2	452	11.48%
5	design aesthetic	220	144	48	0	4	416	10.57%
6	health aspect	300	72	60	0	2	434	%11.03
7	price	310	72	48	4	2	436	11.08%
8	The smoothness of the military cloth	210	120	54	20	0	404	10.26%
9	Ease of cleaning	260	96	60	4	2	422	%10.72
	Total						3936	%100

Determining the relative importance of the local product and comparing it with the relative importance of customer requirements in Table 4

Table 4: The gap between the requirements of the customer and the local product

	customer requirements	The relative importance of customer requirements	The relative importance of the local product	customer requirement gap
1	military cloth durability	%11.84	11.35%	0.49%
2	color fastness	%11.38	12.44%	
3	weather resistance	%11.64	12.87%	
4	Measurements	11.48%	12.02%	
5	design aesthetic	10.57%	9.84%	0.73%
6	health aspect	%11.03	10.21%	0.82%
7	price	11.08%	10.16%	0.92%
8	The smoothness of the military cloth	10.26%	10.10%	0.16%
9	Ease of cleaning	%10.72	11.01%	
		%100	%100	

Determining the technical requirements (the engineer's voice): The technical requirements for the military suit product were determined through the interviews conducted by the researcher with the official of the sewing department, and the components of the military suit were determined for the customer's requirements

Table 5: Product components

Product components (military suit)								
military cloth	buttons	zipper	rings	Marker	bar bottom partridge	tape	Lining cloth	Adhesive tape

The relationship matrix: After determining each of the customer's requirements and the components of the product, it is now possible to define a matrix of relationships to reach the relationship between them. This matrix contributes to determining the contribution percentage of each component of the product in achieving the requirements of the customer.

Weight	Very strong relationship	strong relationship	weak relationship	no relationship
sign	○	○	△	—



Table 5: Matrix of relationships between customer requirements and product components

	military cloth	buttons	zipper	rings	Marker	bar bottom partridge	tape	Lining cloth	Adhesive tape
military cloth durability	0	0	0	0	0	0	0	0	0
color fastness	0	-	-	-	-	-	-	-	-
weather resistance	0	△	△	-	-	△	-	0	-
Measurements	0	0	0	0	0	0	0	0	0
design aesthetic	0	0	0	0	0	△	-	△	-
health aspect	0	-	-	-	-	-	-	0	-
price	0	0	0	0	0	0	0	0	0
The smoothness of the military cloth	0	-	-	-	-	-	-	0	-
Ease of cleaning	0	-	-	-	△	-	-	0	-

The table shows the relationship of the components of the product in meeting the requirements of the customer based on the opinions of specialists.

The relative importance of the components of a military uniform :Table 6

	importance of customer requirements ratio	military cloth	button s	zipper	rings	Marker	bar bottom partridge	tape	Lining cloth	Adhesive tape
military cloth durability	11.84%	59.2	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5
color fastness	11.38%	56.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
weather resistance	11.64%	58.2	11.6	11.6	0.0	0.0	11.6	0.0	58.2	0.0
Measurements	11.48%	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5
design aesthetic	10.57%	52.8	52.8	31.7	31.7	52.8	10.6	0.0	10.6	0.0
health aspect	11.03%	55.1	0.0	0.0	0.0	0.0	0.0	0.0	33.1	0.0
price	11.08%	55.4	55.4	55.4	55.4	55.4	55.4	55.4	55.4	55.4
The smoothness of the military cloth	10.26%	51.3	0.0	0.0	0.0	0.0	0.0	0.0	30.8	0.0
Ease of cleaning	10.72%	53.6	0.0	0.0	0.0	10.7	0.0	0.0	32.2	0.0
total		477.0	189.8	168.7	157.1	188.9	147.6	125.4	290.1	125.4
relative importance of components product		25.51 %	10.15 %	9.02 %	8.40 %	10.10 %	7.89 %	6.70 %	15.52 %	6.70 %

The table shows the relationship between the customer's requirements and the product components in the form of a percentage by multiplying the contribution of each component in achieving the

customer's requirements, as the main purpose of this process is to work on improving the design of the components of the product on the basis of relative importance from the point of view of customers. The





above table also shows that the military cloth and the lining cloth are two of the most contributing components to the formation of the product from the customers' point of view, and therefore the company must work on the basis of the relative importance of the components that were extracted as firsts for work.

**Target Costing**

Determine the target selling price: Determining the target sale price requires knowing the prices of similar products in the market, so the researcher conducted a survey in the local market, in addition to an interview with the official of the commercial affairs department in the company in order to identify the prices of competing products and similar to the product of the military uniform.

The researcher found that the average price in the market is (20000) and the selling price of the Hilla textile factory product is (22000) Iraqi dinars. Therefore, the selling price of the company's product in the research sample exceeds the prices of the competing product, which reduces the company's

competitive position in the market and as a result reduces the opportunity to make profits. The company reconsiders the costs of the product in order to reduce them in order to be able to reduce the selling price while maintaining the specified profit margin.

Determine the target profit: The researcher will adopt a reasonable and recognized 10% profit margin compared to the profit margins of companies in the market.

$$\text{Target Profit Margin} = \text{Target Selling Price} \times \text{Profit Margin Ratio}$$

The profit margin will be according to the above equation:

$$20000 \times 10\% = 2000 \text{ dinars target profit margin}$$

Determine target cost:

$$\text{Target cost} = \text{Target selling price} - \text{Target profit margin}$$

$$20000 - 2000 = 18000 \text{ dinars}$$

Calculating the current cost: Calculating the current cost of the military uniform product based on the cost records obtained from the company.

**Table 7: Cost per unit of a military uniform product**

element	Cost per unit
Variable costs	13 420
fixed costs	5 360
manufacturing cost	18 780
Marketing expenses	648
Total cost / per unit	19 428

Determine the gap between current and target costs: The cost gap is calculated according to the following equation:

$$\text{Actual Cost} - \text{Target Cost} = \text{Cost Gap}$$

$$19428 - 18000 = 1428 \text{ Dinar}$$

The ratio of the cost gap to the actual cost = 7.5%

Actual cost of the unit is 19428 dinars, while the target cost is 18000 dinars, so there is a gap of 1458 dinars, at a rate of 7.5%, and based on that, the amount of the gap will be determined for the components to work on reducing it.

Determine the target cost of the components:

**Table 7: The cost of the components of the military uniform on the basis of the target cost**

components	current cost	Reduction amount	Target cost of components
military cloth	8720	7.5% (654)	8066
lining cloth	720	(54)	666
buttons	140	(10.5)	129.5
rings	200	(15)	185
tape	10	(0.75)	9.25
adhesive tape	20	(1.5)	18.5
marker	100	(7.5)	92.5
bar bottom partridge	40	(3)	37
zipper	550	(41.25)	508.75
total	10500	(787.5)	9712.5



The table above shows that there is a gap of 787.5 dinars for the components of the military uniform, which must be filled to reach the target cost. Therefore, it requires the application of methods that help in this, and as stated in the theoretical side, value engineering will be applied to bridge the gap and reach the target cost.

value engineering

use value engineering with QFD to determine the value index of the product components in the design phase that will contribute to the goal of reducing the cost gap and improving the value of the product.

Function analysis of product components: This stage is the core of the value engineering work through which a value index can be determined for each component of the military uniform.

Determining the relative importance of the product components: This step was previously determined in the QFD application, where this step is represented by the application of the quality function deployment tool that was mentioned previously.

Determining the functions of the product: After dividing the product of the military uniform into a group of components that go into its production, it is then divided into a group of functions

Table 8: Segmentation the military uniform product into its functions

components	function
military cloth	Represents the outer appearance of the military suit and consists of 65% cotton and 35% polyester
lining cloth	The inner layer represents its function as the lining of the suit
buttons	For the purposes of closing the hood, as well as controlling the size of the sleeves and closing the pockets, in addition to closing the pants
rings	to carry external things
tape	cloth hook
adhesive tape	Hook the band in the shorts
marker	guide for use
bar bottom partridge	It is used under the pants for fastening
zipper	Use to close pants and pockets

Determine the relative importance of the cost of the components: Determining the cost of the components that make up the military uniform, as well as the relative importance of each component.

Calculate the relative importance of the cost of the component on the basis of the following equation: The relative importance of component cost = component cost / Total component costs

Table 9: The relative importance of the cost of components of a military uniform

components	current cost	Relative importance
military cloth	8720	%83.04
lining cloth	720	%6.85
buttons	140	%1.33
rings	200	%1.90
tape	10	%0.095
adhesive tape	20	%0.19
marker	100	%0.95
bar bottom partridge	40	%0.38
zipper	550	%5.238
total	10500	%100

Determine the value index: The value index is determined according to the following equation

Value index= relative importance of each component/ relative importance of the cost of each component

Table

components	relative importance of each component	relative importance of the cost of each component	value index
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military cloth	%61.755	%83.04	0.74
lining cloth	%24.92	%6.85	3.64
buttons	%3.586	%1.33	2.70
rings	%1.419	%1.90	0.74
tape	%0.583	%0.095	6.136
adhesive tape	%0.583	%0.19	3.069
marker	%3.828	%0.95	4.029
bar bottom partridge	%1.358	%0.38	3.573
zipper	%1.915	%5.238	0.365

Based on the value index extracted from the table, the components that are subject to value engineering procedures whose value index is less than 1 are as follows:

- military cloth
- rings
- zipper

evaluation and brainstorming: Put forward all ideas and proposals through which costs are reduced and value is improved

Importing military cloth directly from the source in large quantities to get discounts.

Reducing rings costs Using the recycling process of excess military cloth from the production processes of the same product to produce the required rings.

Opening a production line to produce zipper and recycle military cloth (normal spoilage) as raw materials.

### CONCLUSIONS

The adoption of traditional methods in production and sales planning indicates a clear defect in studying the reality of the market and customer requirements. There is an urgent need to apply strategic cost management tools by the company to keep pace with the developments of the modern competitive environment, especially the target cost technology because of its reliance on pricing through cost targeting and pricing based on market research. Value engineering is an essential technique for the work of the target cost and the initial cost of the product through the so-called functional analysis of the product, which helps in identifying deficiencies and weaknesses in the implementation of activities by analyzing them into added value and non-added value, which in turn will be reflected in the correct and fair determination of the target cost.

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