

# The Integration Between Green Target Cost And Value Engineering To Achieve Competitive Advantage

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## **Abstract**

This research aims to verify the contribution the integration between green target cost and value engineering contributes to achieve a competitive advantage. it uses qualitative approach through reviewing relevant studies and literature. The results of the study indicate that the integration between green target cost and value engineering contributes to providing green products that meet environmental specifications at an appropriate cost, thus achieving a competitive advantage. It recommends the use of value engineering to support the green target cost methodology to achieve competitive advantage.

**Keywords:** Target Cost, Green Target Cost, Value Engineering, Competitive Advantage.

## **I. INTRODUCTION**

The growing interest in environmental issues has led to a trend towards green products, which are widespread today, this transfer attributed to the negative effects of traditional products on the environment, such as global warming, depletion of resources, and the emission of toxic gases. Green products have characteristics that require additional costs, making them sometimes an option that is unable to achieve a competitive advantage for enterprises (Dangelico & Pujari, 2010, p. 273). In order to manage the cost of green products, the green target cost methodology has been approached, which refers to process of managing the cost of green products that relies on merging the environmental requirements costs of these products with the traditional target costs, whereby an amount is added to the price of the product as a price premium resulting from the presence of a green advantage (Nishimura, 2014, p. 56). This methodology, by integration with other

methodologies, contributes to reducing the cost without compromising the quality of the product and its environmental specifications. The value engineering is one of the methods used to support the target cost process as you work to define the needed functions and establish value for them then develop alternatives that work to achieve the same level of performance for these functions at the lowest cost (Mostafaeipour, 2016, p. 26).

Providing products with good specifications at a lower cost contributes to achieving the competitive advantage of enterprises (AL-Hadid, 2017, p. 26). In view of the foregoing, the idea of this research came to know the effectiveness of the integration between green target cost and value engineering to achieve a competitive advantage.

### **1.1 Problem Statement**

Recently, with the widespread spread of green products, many institutions have directed their

production, which puts these institutions in competition with each other. Green products require price premiums as a result of providing environmental requirements, which makes them unable to achieve competitive advantage at times, so they need to properly manage their costs to support their competitive advantage. The study problem was represented in answering the following main question: How does the integration between green target cost and value engineering contribute to achieving competitive advantage?

### 1.2 Research hypothesis

The integration between green target cost and value engineering contributes to providing green products that meet environmental specifications at an appropriate cost, thus achieving a competitive advantage.

## 2. GREEN TARGET COST

### 2.1 Green Products (GP)

Recently, interest in the environment has started to increase by all business sectors, and as a result of sustainable trends, what is known as the green product has emerged, which is used widely in the economic sector and it commonly used to indicate a wide range of products, Green products are defined as products that do not have any negative impacts on the environment, it seeks to preserve the elements and components of the environment (such as energy and resources) and protect them from pollution (reduce waste and toxic emissions) (Dangelico & Pujari, 2010, p. 273). In addition, green products are designed in a way that reduces the negative impacts on the environment across the whole life cycle through the use of renewable, recyclable materials that produce no toxic emissions (Durif, Boivin, & Julien, 2010, p. 27). Furthermore, the Commission of The European Community defines green products as the ones that "use less resources, have lower impacts and risks to the environment and prevent waste generation already at the conception stage" (Gesiot, 2012, p. 10). Therefore, the concept of green products is based on the use of materials that reduce the

negative impacts on the environment and protect its resources from depletion and pollution.

## 2. INNOVATING GREEN PRODUCTS

The process of innovating green products meets many challenges. One of these challenges is the integration between the characteristics of the green product and the traditional product to avoid the advancement of the quality of between them. Moreover, Green products experiencing from a lack of customer awareness of their importance and the extent of their positive impact on the environment (Dangelico & Pujari, 2010, pp. 479-480). On the other hand, competitiveness is the biggest challenge for green products, it is difficult for producers to provide these products at competitive prices compared to the traditional product. Thus, green products require a total cost management process to achieve economic affluence (Horváth & Berlin, 2012, p. 25).

### 2.3 The concept of Green Target Cost

Target cost is defined as one of the cost management methods that reduce the cost of the product in the early stages (the stage of research, development and design) (Lange, Boÿs, & Seibert, 2010). The target cost is one of the management accounting activities that aims to reduce the initial costs of products or services without reducing their quality and specifications by studying, analyzing and evaluating all procedures that would reduce the cost of their research, development and design processes (Ghafeer, Rahman, & Mazahrih, 2014, p. 253). There are six key principles of target cost, they include; costing in accordance with the price, focus on customers, focus on product design, value-chain involvement and cost reduction during whole product life cycle (Hassan & Mohamed, 2018, p. 184).

The target cost aims to reduce the total cost of new products, thus achieving the required level of profits and quality levels, which contributes to gaining customer satisfaction and meeting his needs. On the other hand, the target cost stimulates the employees to innovate and creativity during the processes of designing and developing products to reduces their costs and

increases their participation in achieving profits (Hassan & Mohamed, 2018, p. 184).

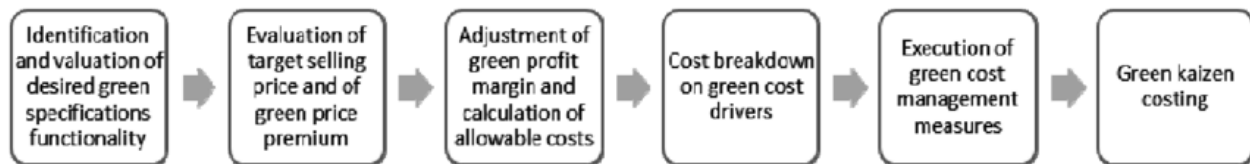
With regard to Green Target Cost (GTC), it is defined as It is an approach to managing the cost of green products that relies on merging the environmental requirements costs of these products with the traditional target costs, whereby an amount is added to the price of the product as a price premium resulting from the presence of a green advantages (Nishimura, 2014, p. 56). It is a process of integrating environmental issues into traditional target cost models as a result of the increase in demand for green products (Maone, 2015, p. 6). This this definition is confirmed by (Melo, Carvalho, Yokota, DGranja, & Noguchi, 2016, p. 2), who indicated that the green target cost is the process of integrating the target cost (TC) principles with environmental requirements.

The widely spread of green products of green products attributed to grow demand for green

products and enact of legislations which imposed the production within specific environmental standards. Providing environmental requirements in products requires additional production costs, which makes producers unable to provide green products at competitive prices, leading many institutions to move towards employing the green target cost in order to manage the cost of these products and provide them at competitive prices (Maone, 2015, p. 6).

#### 2.4 Green Target CostSteps

Horváth and Berlin (2012) pinpoint the steps to implement the green target cost within six basic stages they include: identification and valuation of desired green specifications and functionality, evaluation of target selling price and of green price premium, adjustment of green profit margin and calculation of allowable costs, cost breakdown on green cost drivers, execution of green cost management measures and green kaizen costing as illustrates in figure (1):



**Figure 1.** Green Target CostSteps, source: (Horváth & Berlin, 2012, p. 26)

##### 2.4.1 Identification and valuation of desired green specifications and functionality

In the first stage, specifications and desirable properties for green product are identified (quality and functional performance) from customer view. Most customers do not realize environmental requirements for green products, and the concept of green products is unclear for many of them enough. On the other hand, some believe that the achievement of environmental requirements does not affect the perceived value of the product by customers. Institutions are implementing the characteristics and specifications of green product on the basis of pull and push. The pull means the implementation of the product according to customer's request, while push means knowing the innovative characteristics of the green product by the enterprise itself (Melo, Carvalho, Yokota,

DGranja, & Noguchi, 2016, p. 3). This process (pull and push) increases the perceived value by customers, while the pull process alone may reduce the perceived value by customers. To determine the desirable specifications of green product by customers, developed more than one way. First: The external way, in this way, desired specifications are determined through market information such as information and reports from the stakeholders. Second: Internal way, this method is linked to environmental management and enterprise programs. It can also be used for the consolidated method and linking the previous two way, where common analysis is adopted to assess the characteristics of the green product (Horváth & Berlin, 2012, p. 432).

Contributors to determine the characteristics of green product:

- Properties are determined by customers through the Pull
- Properties imposed by States legislation
- Properties determined by the institution themselves to achieve competitive advantage

#### 2.4.2. Evaluation of target selling price and of green price premium

The second step is evaluation of target selling price and of green price premium by analyzing competitive market conditions and feedback by customers. Some studies indicate that customers are willing to pay the cost of green specifications; While other studies indicate that the green price premium can be achieved under certain circumstances (Melo, Carvalho, Yokota, DGranja, & Noguchi, 2016, p. 3). Therefore, if the client is not willing to pay more for sustainable features, the selling price is determined based on the current selling price. While if the customer is willing to pay the green price premium, this premium will use to achieve environmental characteristics of these products (Horváth & Berlin, 2012, p. 28). The green target price can be determined through a range of tools that can be shown by (Hendricks, 2015, p. 59) as the following

- **Customers:** Customer are interviewed to see their opinions about prices
- **Analysis of secondary market data:** The Econometric approach and demand data obtained from the economic reports are used.
- **Expert Views:** By interviewing the experts in green products and find out their opinions about their prices.
- **Price Experiments:** Customer behavior test for some prices and then change the price and note the difference in their behavior

#### 2.4.3 Adjustment of green profit margin and calculation of allowable costs

The allowable costs are calculated by deducting profit margin from target price. When calculating the allowable costs of green products, the profit

margin must be adjusted because of the high risk associated with this type of product includes, the lack of high expertise with green products, the likelihood of its success is less than the optical products, and its own design process is complex and needs a large amount of information. Moreover, green products require indirect costs and therefore must be covered at the sales price despite not being aware of customers (Horváth & Berlin, 2012, p. 28).

#### 2.4.4. Cost breakdown on green cost drivers

After determining the permitted costs of the product, designers are determined to identify all components of the product, which helps to promote customer recognition for the value of green product specifications. This process is performed by quality function deployment (QFD), which help product designers to know the environmental effects of each component of the product component (Melo, Carvalho, Yokota, DGranja, & Noguchi, 2016, p. 3)

#### 2.4.5. Execution of green cost management measures

Determine the standard costs of green product components taking into account the costs of making products compatible with environmental requirements (product greening), then comparison standard cost and the allowable cost for each component is made through a value control chart. After that the differences are analyzed with the aim of developing and improving the design of components and reducing the total cost without minimizing product quality and functional efficiency (Melo, Carvalho, Yokota, DGranja, & Noguchi, 2016, pp. 3-4).

#### 2.4.6. Green kaizen costing

The continuous optimization process is extension of traditional kaizen costing, which is not only a way to reduce costs, but giving environmental issues great important (Melo, Carvalho, Yokota, DGranja, & Noguchi, 2016, p. 4)

### 3. VALUE ENGINEERING

#### 3.1. The emergence of Value Engineering

Historically, the emergence of value engineering goes back to the Second World War in the United States of America when the construction company (General Electric) searched for alternatives contribute in reducing the cost of products and developing them due to the scarcity of strategic resources (Hewett, 2017, p. 31).

In 1947, Lawrence D. Miles was in charge of purchasing at this company, he had to provide alternative resources for the manufacturing and production process within the required quantities. As a result, Miles began to identify the resources, analyze their functions and the factors that drive customers to buy them, thus he proposing alternatives that increase the value and achieve the same functionality and performance required without reducing the quality (Rachwan, Abotaleb, & Elgazouli, 2016, p. 432).

### 3.2 The Concept of Value Engineering

Value engineering is defined as the systematic application of a set of methods to define the needed functions and establish value for them then develop alternatives that work to achieve the same level of performance for these functions at the lowest cost (Hewett, 2017, p. 31; Mostafaeipour, 2016, p. 26). Moreover, value engineering is defined as a methodology that analyzes the function of goods and services with the aim of obtaining the required functions and performance for the user at a lower total cost without diminishing the quality or the level of performance that satisfies the customers (Heiza, enen, Mahdi, & Hawas, 2015, p. 1).

Jeyakumar, (2013 , p. 45) argues that value engineering is value engineering is the process of determining the functional benefits that a customer requires of the entire product or every part of it within an appropriate cost. In addition, Value engineering is an approach that uses target cost to concern the cost of products by analyzing the required product functions and providing alternatives that achieve these functions without compromising the level of performance (Blocher, Stout, Juras, & Smith, 2010 , p. 548)

### 3.3 Objectives of Value Engineering

Value engineering aims to achieve a set of objectives include; Performance development that results from changes in work style and process design according to clients' needs. Focusing on the customer by defining his needs and taking them into account when designing. Speed of performance the process of providing data helps in making decisions more quickly. Achieving quality by improving the quality of services and products in line with the needs of customers. Reducing costs by eliminating unnecessary operations and focusing on what contributes to adding value. outperforming competitors, value engineering helps to achieve a competitive advantage through the alternatives it provides with lower costs and high quality (Hewett, 2017, pp. 32-34; Teschl, 2018, p. 198; Kosala & Karunasena, 2015, p. 538).

### 3.4 Value Engineering Methodology

The value engineering methodology takes place within a set of sequential stages. The value engineering methodology can be defined within three basic stages. Each stage consists of a set of processes. The value engineering methodology can be clarified according to (Rachwan, Abotaleb, & Elgazouli, 2016, pp. 432-433; Heiza, enen, Mahdi, & Hawas, 2015, pp. 3-4) as follows:

**Stage 1: The preparation stage for conducting the study (Pre-Workshop/ Study):** This stage consists of two basic processes: Selecting the value engineering product and then forming a value engineering team.

**Stage2: The stages of conducting the study (Workshop/ study Value):** This stage is the essence of value engineering; it is a technical process in nature. This stage consists of six consecutive processes, include:

- **Information phase:** The work team collects all necessary data and information related to product costs, product specifications and any technical information
- **Function analysis phase:** This process aims to control costs and raise the level of quality by understanding and analyzing the required functions of the

product or every part of it, and then classifying into basic, secondary and aesthetic functions.

- **Creativity phase:** This process aims to provide new and innovative ideas and alternatives that contribute to achieving the required functions at a lower cost without compromising product quality and performance efficiency.
- **Evaluation phase:** This stage is based on the process of listing and classifying alternatives, then evaluating them and proposals and testing their efficiency to choose the best ones

- **Development phase:** In this stage, tested alternatives are developed and the implementation process is supported with drawings and illustrations.
- **Presentation phase:** the study is presented to the decision maker by explaining its methodology, methods used, and expected results.

**Stage 3: Implementation and follow-up stage (Post Workshop/ Study) :** This stage is considered as the stage of harvesting results and following up the performance of the proposed alternatives and their effectiveness.

The following figure illustrates the value engineering methodology and its stages.

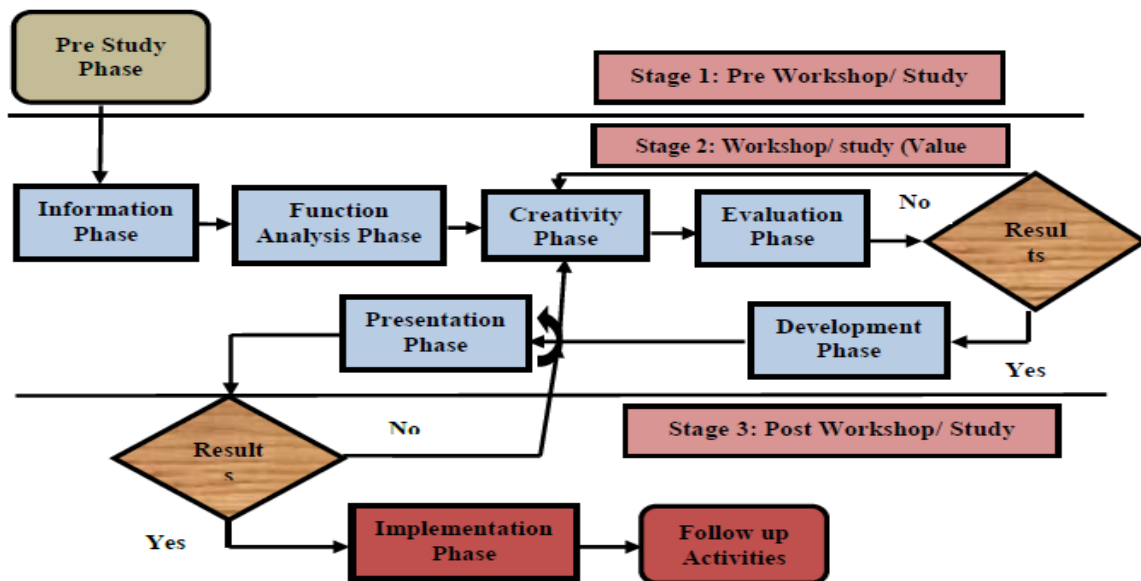


Figure 2. Value Engineering Methodology and its stages, source: (Heiza, enen, Mahdi, & Hawas, 2015, p. 4)

## 4. Competitive Advantage

### 4.1 The Concept of Competitive Advantage

Globalization and openness to global markets have contributed to the intensification of competition between business enterprises, which led to the emergence of competitive advantage as one of the concepts that institutions seek to achieve as a tool to ensure the sustainability of their work (Dash, 2013, p. 7). Competitive Advantage is defined as the increase in the level of value provided by the organization compared to the competitors from the customer's point of

view (Hosseini, Soltani, & Mehdizadeh, 2018, p. 2). It is the components that an organization owns that contribute to enhancing the demand for its products or services in the market compared to competing institutions (Arabiyat, 2018, p. 27).

Furthermore, Al-Atrash (2018, p. 18) argues that competitiveness is the ability of an organization's products or services to meet customer needs and aspirations compared to its competitors. It is a set of distinct characteristics of the institution and its products, which constitute important characteristics in the target market which distinct from its competitors.

The researcher argues that the Competitive Advantage is what distinguishes a company from others by conducting the appropriate strategy.

The enterprise can obtain the competitive advantage through external and internal sources. External sources include; "changes in customer or beneficiary demand, price changes, changes in the technical and technological level, capability of scanning the environment and obtaining information and flexibility to respond to change". While internal sources include; the creativity of the company's members, the innovation capacity, economy of scale, advanced technology owned by the firm, learning ability of company members, the firm ability to imitate, the full range of competencies of the company's members and capabilities of the company (Negulescu, 2019, pp. 1-72).

#### 4.2 Importance of the Competitive Advantage

The importance of the competitive advantage could be shown through the following aspects (AL-Hadid, 2017, p. 22):

1. studying strategic management; during the last two decades, the studies of strategy and its management include the idea of the competitive advantage
2. It is regarded as an important and a key factor for companies work, because it is the foundation which the enterprise competitive strategy is built.
3. It is regarded as a tool for meet the other enterprises' challenge that enterprise would face in the involved sector. This could be accomplished through the enterprise's attempt to improve its competitive knowledge and its ability to achieve the client's needs in the future through the standardization of production techniques and skills that enable it to adjust readily with the mutable opportunities.
4. It is a very significant criterion for successful enterprises because the successful enterprises are the enterprises that "find new forms for the continually used advantage, as long their old forms have become known and available

widely while the competitors fully know them".

#### 4.3 The Dimensions of Competitive Advantage

The literature varies in defining the dimensions of competitive advantage and its components. Al-Atrash (2018) argues that the dimensions of competitive advantage include; Cost, Quality, Responsiveness, Reliability and Innovation. Arabiyat (2018) identifies them in cost, quality, time, innovation. While Darwish (2018) argues that it includes; cost quality, speed, Reliability, Innovation. In this research the dimensions of competitive advantage represent of cost, quality, time (speed), Reliability, and Innovation.

1. **Cost:** It refers to an enterprise 's ability to provide services or products at the lowest cost without compromising quality (Al-Atrash, 2018 , p. 19).
2. **Quality:** It refers to the ability of the enterprise to provide a distinct product that distinguishes itself from competitors so that it is able to meet or exceed customers' needs and aspirations (Arabiyat, 2018 , pp. 18-19).
3. **Time (Speed):** It refers the ability of the enterprise to achieve a rapid response to meet customer demand provided that it does not affect the quality of the service or product provided (Darwish, 2018 , p. 18).
4. **Reliability:** It refers the ability of the enterprise to provide the product or service to the customer accurately and continuously without compromising quality (Al-Atrash, 2018 , p. 21).
5. **Innovation.:** refers the ability of an enterprise to lead and produce new products or services characterized by innovative ideas, which are difficult for other competitors to catch up with (Darwish, 2018 , p. 20).

#### 4.4 Competitive Advantage Strategies

Competitive advantage can be achieved through three strategies. These strategies constitute competitive alternatives that contribute to achieving the company's goals and strengthening

its competitive position in the market. It is defined as " the plan of the company in creating a balance between its internal strengths and weakness and external opportunities and threats for maintaining the competitive advantage" (AL-Hadid, 2017, p. 26). Following below it has been explained (AL-Hadid, 2017, pp. 26-27):

- **Cost Leadership Strategy** :It refers to an enterprise's ability to design, provide and market products or services that are more efficient than its competitors. It is defined as the strategy followed by organizations to achieve competitive advantage by providing products and services at the lowest cost. This strategy is based on using the lowest possible cost by eliminating activities or components that do not generate added value to the market. In this strategy, large markets are targeted because of their ability to price products and services at lower prices than

their competitors while maintaining a specified profit margin.

- **Differentiation Strategies:** It refers to the enterprise's ability to provide products or services of unique value and superior in quality or other features as after-sales service. It is defined as the strategy that is based on creating unique characteristics of products and services to gain the approval of customers and evaluate them with a high degree by them and therefore, they become more distinctive than the products or services of competitors.
- **Focus Strategy:** It refers to an enterprise's ability to provide products and services of unique and superior value to a specific category of customers or segment of the market line or geographical market. it is defined as the strategy based on choosing a small competitive domain.

		Competitive Advantage	
		Lower costs	Differentiation
Competitive Scope	Broad Target	1. Cost leadership	2. Differentiation
	Narrow Target	3a. Cost Focus	3b. Differentiation Focus

**Figure 3. Competitive Advantage Strategies, source(AL-Hadid, 2017, p. 27)**

4.4.1 Competitive strategy by applying the ISO 14001 environmental standard

To protect the environment from the negative impacts of products, many enterprises tend to use green products or environmentally friendly practices in their production process. The emergence of ISO 14001 environmental standards has contributed to transfer towards

environmentally friendly production practices. This system includes a set of conditions to achieve a sustainable competitive advantage. Environmental issues are one of the points that can achieve competitive advantage. The implementation of ISO 14001 standards is a way to achieve this advantage through its ability to achieve operational efficiency, waste energy use, reduce costs through recycling processes,



improve product quality and reduce packaging costs (Walke, Topkar, & Kabiraj, 2010, p. 2). Therefore, the organizations that seek to obtain ISO 14001 certification are those concerned with improving their environmental performance and achieving a competitive advantage by providing products compatible with the environment.

### **5. The integration between green target cost and value engineering to support competitive advantage**

Value engineering classifies activities or components that add value to the customer and other activities and components that do not add value. Therefore, this process contributes to identifying the activities or components that can be excluded (target cost), i.e. reducing the cost without compromising the functional characteristics of the product (quality and performance). The result is to obtain a product with lower total costs and high specifications that is able to achieve the competitive advantage of the enterprise (Horngren, Datar, & Rajan, 2015).

The two strategies of cost leadership and differentiation are among the most effective strategies in achieving competitive advantage. These two strategies can be worked on through green target cost and value engineering. Green target cost seeks to provide a product that meets environmental requirements and is distinguished from other traditional products while reducing the total cost by excluding elements that do not add value through the value engineering process that determines desired specifications and analyzes the required functions of the product thus a greater ability to shorten all elements and costs that do not add value or benefit to the customer. In other words, the integration between green target cost and value engineering helps to provide green products at lower cost, with unique quality and features, i.e. achieving competitive advantage.

### **Results**

1. Green target cost is one of the important methods in controlling the product and its costs in the early stages before starting the actual production process, which contributes to providing green products with high

environmental specifications and appropriate cost, thus achieves the competitive advantage of enterprises.

2. The green target cost method emerged as an improved approach from the target cost method due to the widespread availability of green products and attention to environmental issues.
3. When calculating the target cost, the price premium added as a result of the environmental specifications must be taken into account.
4. Value engineering works to determine product specifications and to determine the required functions, which contributes to facilitating the process of reducing costs (excluding activities and elements that do not add value)
5. The integration between value engineering and green target cost contributes to reducing the cost of green products without compromising their quality and efficiency of environmental requirements, which contributes to achieving competitive advantage.

### **Recommendations**

1. The green target cost is the target cost plus the green price premium. Therefore, when determining it, organizations should price their products similarly to competitors plus an appropriate green price premium.
2. An integrated team from engineers, production supervisors, designers, and cost accountants must be formed to the value engineering process
3. Organizations should focus on the ingredients and activities that give the product an added value
4. The need to pay attention to environmental requirements in products to reduce their negative effects on the environment and achieve environmental sustainability
5. The necessity to spread awareness among customers of the importance of green products.

### **References**

1. Al-Atrash, S. A. (2018 ). The Impact of Supply Chain Control Tower on Competitive Advantages of Jordanian Pharmaceutical Manufacturing Industry. Amman , Jordan: Middle East University.
2. AL-Hadid, S. A. (2017). The Impact of Talent Management on Attaining Competitive Advantage: A Field Study on Jordanian Telecommunications Companies. Amman, Jourdan: Middle East University.
3. Arabiyat, A.-K. A. (2018 ). The Impact of Intellectual Capital on achieving Competitive Advantages within commercial banks in Jordan. Amman, Jordan: Middle East University.
4. Blocher, E., Stout, D., Juras, P., & Smith, S. (2010 ). Cost Management: A Strategic Emphasis. USA: Mc Graw-hill.
5. Dangelico, R. M., & Pujari, D. (2010). Mainstreaming Green Product Innovation: Why and How Companies Integrate Environmental Sustainability. *Journal of Business Ethics*, 95(3), 471-486.
6. Darwish, A. H. (2018 ). The Effect of Total Just in Time on Competitive Advantage on International Fast Food Restaurants in Jordan. Amman, Jordan: Middle East University.
7. Dash, A. K. (2013). COMPETITIVE ADVANTAGE: ITS IMPORTANCE AND IMPACT ON DESIGN OF STRATEGY. *International Journal of Application or Innovation in Engineering & Management (IJAIEM)*, 2(12 ), 7-10.
8. Durif, F., Boivin, C., & Julien, C. (2010). In search of a green product definition. *Innovative Marketing*, 6(1), 25-33.
9. Gesiot, M. (2012). Explaining adoption and market success of "green products" A Conjoint Analysis Experiment on German Students' preferences on eco-labels. Lisbon, Portugal: Technical University of Lisbon.
10. Ghafeer, N. A., Rahman, A. A., & Mazahrih, B. J. (2014). The Impact of Target Cost Method to Strengthen the Competitiveness of Industrial. *International Journal of Business and Social Science*, 5(2), 250-263.
11. Hassan, K. M., & Mohamed, A. h. (2018). The Impact of Target Costing (TC) on Reduction of Manufacturing Cost. *Journal of Economic and Management Sciences*, 19(1), 180-195.
12. Heiza, K. M., enen, N. E., Mahdi, I. M., & Hawas, M. A. (2015). VALUE ENGINEERING, VALUE ANALYSIS AND VALUE MANAGEMENT OF VERTICAL SLIP FORM CONSTRUCTION SYSTEM. *International Conference on Structural and Geotechnical Engineering*, (pp. 1-10). Cairo, Egypt.
13. Hendricks, J. (2015). Managing environmental sustainability using target costing principles. Toronto, Canada: Chartered Professional Accountants Canada.
14. Hewett, C. (2017). Effects of Value Engineering on the Sustainability of New Facilities on University Campuses: A Case Study Analysis of Project and Facility Managers' Perceptions and Experiences. Texas , USA: Texas Tech University.
15. Horngren, C. T., Datar, S. M., & Rajan, M. (2015). Cost Accounting: A Managerial Emphasis. USA: Prentice Hall.
16. Horváth, P., & Berlin, S. (2012). Green Target Costing: Getting Ready for the Green Challenge. *Cost Management*, 26(3), 25-37.
17. Hosseini, A. S., Soltani, S., & Mehdizadeh, M. (2018). Competitive

- Advantage and Its Impact on New Product Development Strategy (Case Study: Toos Nirro Technical Firm). *Journal of Open Innovation: Technology, Market, and Complexity*, 4(17), 1-12.
18. Jeyakumar, R. (2013 ). The Implementation and Effectiveness of Value Engineering in the United Arab Emirates. Wales, UK: University of Glamorgan .
  19. Kosala, R., & Karunasena, G. (2015). Value Engineering Practices and Its Impact to Construction Industry. *The 4th World Construction Symposium 2015: Sustainable Development in the Built Environment: Green Growth and Innovative Directions*, (pp. 538-546). Colombo, Sri Lanka.
  20. Lange, S., Boÿs, J. d., & Seibert, K. (2010). The use of Target Costing and Value Engineering at ALSTOM Company. Småland, n Sweden: Linnaeus University.
  21. Maone, D. (2015). Cost Management Tools for the Environmentally Sustainable Firm. *Cost Management Journal*, 1-10.
  22. Melo, R. S., Carvalho, A. C., Yokota, A. A., DGranja, A., & Noguchi, M. (2016). ZEMCH and Green Target Costing Approaches: Inferences from a Design Workshop. *5th International Conference on Zero Energy Mass Customised Housing - ZEMCH* (pp. 1-9). Kuala Lumpur, Malaysia: ZEMCH Network.
  23. Mostafaeipour, A. (2016). A Novel Innovative Design Improvement Using Value Engineering Technique: A Case Study. *Journal of Optimization in Industrial Engineering*, 19, 25-36.
  24. Negulescu, O. H. (2019). THE IMPORTANCE OF COMPETITIVE ADVANTAGE THE IMPORTANCE OF COMPETITIVE ADVANTAGE STRATEGY. *General Management*, 29(1), 70-82.
  25. Nishimura, A. (2014). Transforming cost design into environmentally conscious cost design in Japan: likelihood and problems for further development. *Journal of Management Control*, 25, 55-75.
  26. Rachwan, R., Abotaleb, I., & Elgazouli, M. (2016). The Influence of Value Engineering and Sustainability Considerations on the Project Value. *Procedia Environmental Sciences*, 34, 431-438.
  27. Teschl, E. (2018). An Analysis of Expectations in Industrial Value Engineering Projects. *European Journal of Business Science and Technology*, Mendel University in Brno, Faculty of Business and Economics, 4(2), 196-215.
  28. Walke, R., Topkar, V., & Kabiraj, S. (2010). Managing Risk for Green Supply Chain Management: Competitive Strategies for Manufacturing Companies. *Skyline Business Journal*, 6(1), 1-11.