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The Impact of Target Costing (TC) on Reduction of Manufacturing Costs “Empirical Study”

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المستخلص:

هدفت هذه الدراسة الى معرفة أثر استخدام التكلفة المستهدفة (TC) على تخفيض التكاليف الصناعية بالشركات الصناعية السودانية العاملة بولاية الخرطوم، كما هدفت الى معرفة إلى أي مدى يتم استخدام التكلفة المستهدفة في الشركات الصناعية السودانية، ولهذا الغرض قام الباحثان بتوزيع عدد (120) إستبانة، وتم الحصول على عدد (90) إستبانة صالحة للتحليل، أي ما يساوي نسبة (75%) ، تم استخدام برنامج (SPSS) للتوصل إلى نتائج الدراسة من خلال حساب كل من (الوسط الحسابي، الانحراف المعياري، مربع كاي، والنسب المئوية). أشارت نتائج الدراسة إلى أن الشركات الصناعية السودانية لا تستخدم أسلوب التكلفة المستهدفة في تسعير منتجاتها على الرغم من وجود بعض الممارسات العملية للأسلوب، كما توصلت الى ان استخدام هذا الاسلوب يوفر معلومات كافية للرقابة على التكلفة الصناعية ومن ثم تخفيضها، بالإضافة إلى ذلك فإن تحقيق هامش الربح المستهدف يتطلب تخفيض جميع عناصر التكاليف الصناعية. خلصت الدراسة إلى أن الأسباب الرئيسية وراء عدم استخدام أسلوب التكلفة المستهدفة يرجع إلى نقص المعرفة بهذا الاسلوب ومزاياه التي يمتاز بها، وعدم دعم ومساندة الإدارة العليا لتطبيق الاساليب الحديثة في إدارة التكاليف، بالإضافة إلى تبني معظم الشركات الصناعية السودانية للأنظمة التقليدية في حساب وإدارة التكاليف الصناعية ، وأوصت الدراسة الشركات السودانية الصناعية باستخدام التكلفة المستهدفة حيث اعتبرتها نظاماً مكملاً لأنظمة التكاليف .

ABSTRACT:

The purpose of this study is to examine the impact of using target costing method on reduction of manufacturing costs in Sudanese Industrial Companies operating in Khartoum State; as well as exploring the extent of adoption of this method by these companies. For this purpose, the researchers distributed (120) questionnaires, whereas (90) of them were retrieved, which amount to 75%. The study used SPSS program to analyze its results through calculating means, standard deviations, Chi-Square, and percentages. The study results indicated that Sudanese Industrial Companies don't use the target costing method in pricing their products despite the existence of some practical practices for this method. In addition, the adoption of this method will provide adequate information for supervising and reducing industrial costs. Furthermore, achieving the target profit margin require reducing the overall industrial costs. The study concludes that the major reasons behind not using the target costing method can be attributed to the inadequate knowledge about this method and the various merits it possess, the lack of support from the higher management for applying modern techniques in cost management, besides the adoption of traditional costing method in calculating and managing industrial costs by most of the Sudanese Industrial Companies. The

study calls for the Sudanese Industrial Companies to use the target costing method because it is a complementary system for other costing systems.

Keywords: Target Costing Method, Cost Management, Sudanese Industrial Companies, Khartoum State

Introduction:

A new management practice is typically a solution to a practical problem facing industry. If the solution is successful, the practice is further developed and it may generate interest from others outside the company who would like to adopt it or study how it works. Target costing was first developed by Toyota to proactively manage multiyear profit plans that emerged from the company's strategy. (A.M. JACOMIT & A.D. GRANJA, 2011). Fatima Amir, et al (2016) claimed that the companies of all sizes have an incentive for cost reduction to enhance performance in new business environment. Traditional techniques (cost-plus techniques) which assumed cost is given to determine selling price (not competitive with the market) were no longer able to identify good opportunities for cost reduction. According to Selim & Duygu, (2013) presented costing methods that are insufficient to provide efficient cost information in these conditions of competition, has been called into question. Cost information and cost management have become an essential fact for businesses that want to be more successful in the risen heat of the competition of today's economic climate. Moreover, the achievement of these targets has to be simultaneously attempted in all areas from upstream to downstream processes.

The Problem of study:

Target costing method is spreading around the world. This study deals with the issues surrounding the implementation of this method in Sudanese industrial companies. The study asked the following questions as: To what extent is target costing used in Sudanese industrial companies? How does the level of target costing use in Sudanese industrial companies?

The objectives of study:

The main objective of this study to discover how widely used target costing in Sudanese industrial companies, a part of the main objective; the following sub-aims can be identified:

- To examine the relationship between TC and reducing manufacturing Costs.
- To determine the reasons surrounding a decision of management's Sudanese industrial companies for not using target costing.
- To examine the benefits experienced by companies who use target costing.

The important and contribution of study:

The study contributes to adding empirical evidence on the role of Target costing in the reduction of manufacturing costs. And help the managers of Sudanese industrial companies to reducing the manufacturing costs by using target costing method.

The methodology of study:

The study followed a descriptive analytical method to determine how the TC helps to reduce the manufacturing costs, by examining the impact of target costing on reduction costs.

The hypothesis of study:

There is relationship between Targets costing and reduction the manufacturing costs.

The boundary of study:

The study applied at Sudanese manufacturing companies the working in Khartoum stats.

The Limitations of study:

Some respondents might be unwilling to give accurate information for fear that the information may be sensitive or confidential bearing in mind the level of importance of cost information. In addition, the study examined only Industrial companies in

Khartoum state and as results the findings can't be generalized to whole companies around the world.

Previous studies:

The researchers reviewed several studies relate to this study, which include the following:

Lin and Huang (2009):

explored the implementation of target costing in a global supply chain setting. The researchers suspect that the complexity of varying operating conditions of global supply chain partners may require a unique approach to successfully implement target costing. To find evidences, the researchers conducted a case study, relying on company visits and manager interviews, with a focus on the sporting goods industry. The study has shown that the implementation of target costing can be divided into three distinctive phases: 1) market driven target costing, 2) product-level target costing, and 3) component-level target costing. The researchers found that a brand company tends to form a long-term partner relationship with those contract manufacturers that are capable of producing complex products. Once the relationship is established, extensive communication and assistance from the brand company facilitate the implementation of target costing in their factories.

J. Sharma (2012):

attempted to merge and diverse tools of customer-orientation, financial consideration and value creation, thus integrating TC and VE into QFD framework. The suggested methodologies aim at facilitating cross-functional product design and development, integrating both organizational and functional aspects of the development process so as to maximize value creation. The study found that the target costing is a method that takes financial, manufacturing and customer aspects into consideration during designing phase and helps firms in making product design decisions to increase the profit of the company. Target costing is a strategic tool for planning that takes a holistic view of products and their sub-assemblies, and identifies the opportunities for cost reduction and product improvement.

Selim Yuksel & Duygu Celayir (2013):

investigated the problem of the Globalization arisen with the fast transformations in economy and technology, is also accompanied consequential changes in the competition environment of the businesses. Global competition environment obligated businesses to reach three important objectives at the same time and at the highest level. Businesses have had to design and produce high-quality, low-cost products to meet customer requests and expectations as soon as possible. In this environment, conventional cost methods and cost-plus pricing strategies have become insufficient; therefore new cost management methods have been developed. The study found that the target costing method can be realized in conjunction with the Activity based costing method for ensuring the desired efficiency of the target costing method.

Sulayman H. Atieh, (2014):

examined the application of target costing in manufacturing companies in Jordan. And the study investigated the use and adoption of target costing approach in manufacturing companies in Jordan. The results of the study include the following: manufacturing companies in Jordan apply the requirements of Target costing. The benefits of adopting Target costing are cost reduction, customers' satisfaction, quality control, efficient pricing decisions, and application of team work approach; Obstacles for not adopting Target costing in Jordan are: nature of the company's work makes Target costing not applicable, information gathering and analysis are costly, and lack of management support and efficiency.

OFILEANU Dimi, (2015):

highlighted the concept of Target costing. Based on the characteristics, the study also presented its main advantages and disadvantages. And a comparison is being made between Target cost and Traditional cost, and between Target cost and Standard cost (the difference between Target cost and Standard cost is the same as the one between cost reduction and cost control: Target cost generates structural improvements and Standard cost generates operational improvements). The study found that the implementing Target costing determines many advantages; most of them are long term advantages, helping to maintain and improve the competitiveness of the entity.

Fatima Amir Hamad, et al, (2016):

examined the impact of the application of Target Costing technique on performance improvement through using the case study method for one Sudanese manufacturing company (Sinar Sugar Company). The study results indicated that Sinar Sugar Company does not use the Target Costing technique. However, the analysis of company's archive data using the Target Costing technique may help the company to reduce its production costs and achieve the target costs, thus enabling it to attain the desired profits for the existing products. In addition, the adoption of this technique will provide useful information for controlling and reducing costs for the new products before they produced, which will affect positively the overall company performance.

MELO, R. S. S. de & GRANJA, A. D., (2017):

investigated the problems associated with the traditional practice of reducing costs in construction and the need to increase business competitiveness in the residential real estate sector. In this context, target costing is a promising approach to improve the competitiveness of companies by ensuring that the products launched on the market do not jeopardize the company's results and value delivery to customers. However, far too little attention is paid to target costing implementation by companies that develop residential real estate products for sale and face strong market competition. Thus, this study seeks to investigate whether the standard framework of target costing - with or without adjustments - to real estate developers. The proposed guidelines are related to the three main sections of the target costing process: market-driven costing, product-level target costing and component-level target costing.

The difference between current study and previous studies, which most of them focused on identifying the important of the using of target cost, identify the factors that influence the determination of the target cost, and the level of success of the implementation of it. This study added to the benefit of previous studies, and it examined the relationship between target costing and reducing manufacturing costs, determined the reasons surrounding decisions of Sudanese industrial companies for not using target costing.

Section two: Theoretical Framework:**Definition of Target costing:**

Target costing can be defined as a cost management tool for reducing the overall cost of a product over its entire life cycle with the help of the production, engineering, R&D, marketing and accounting departments. (J. Sharma, 2012, P.313).

Target costing method is developed as a result to the comprehension of two important facts related to the market and the costs. (Pazarceviren, 2013, P.4)

Target costing is a systematic approach for the desired product quality and the ability to function, what price should be produced with profit expected to be attended by sales forecasts. (B. Shahrabi & S. Ashouri, 2011, P.901).

The researchers thought the target cost is an approach to determine a product's lifecycle costs which should involve setting by subtracting desired profit margin form market price.

Basic Principles of Target Costing Method:

Conceptual basis of TC process consists of six basic principles. A principle represents an extensive approach in the scope of cost management and they also present an approach totally different from the conventional approach. (Dan Swenson & Jan Bell, 2003, 12)

- Costing in accordance with the price,
- Concentrating on customer,
- Concentrating on product design,
- Extensive involvement,
- Cost reduction during whole product life cycle,
- Paying attention to value chain.

The strategy underlying target costing is that (80 – 85%) of a product's life cycle cost is determined during its development stage. Consequently, target costing focuses its efforts on a product's development since it has the greatest potential for managing a product's cost. (Robert Kee, 2010, P.204).

There are six key principles of target costing as follows: (Dan Swenson & Jan Bell, 2003, P.12)

- Price-led costing. Market prices are used to determine allowable or target costs.
- Focus on customers.
- Focus on design. Cost control is emphasized at the product and process design stage.
- Cross-functional involvement.
- Value-chain involvement. All members of the value chain e.g., suppliers, distributors, service providers, and customers are included in the target costing process.
- A life-cycle orientation. Total life-cycle costs are minimized for both the producer and the customer.

The objectives of Target costing:

Particularly those appear to best advantage. If you have a special advantage in running and maintaining an effective costing system to succeed, we are able to achieve the following: (B. Shahrabi & S. Ashouri, 2011, P.901)

- Expected cost of product.
- The cost of achieving more efficient (more practical).
- Spend the money where it will be most effective (more effective).
- Identify customer needs.
- Implementation of corporate activities with customer needs.
- To increase customer satisfaction.
- The cost of notifying employees.
- Participation of employees and their ideas in order to improve quality, time and cost of products, which ultimately leads to increase motivation and morale in the working group, will be organized.

According to U. Ibusuki, P.C. Kaminski (2007, P.460) Target costing has two objectives:

- Reduce the cost of new products so that the level of required profit could be guaranteed, simultaneously satisfying the levels of quality, development time and price demanded by the market.
- Motivate all the employees to achieve the target-profit during the new product development, turning Target costing into an activity of profit administration for the whole company, using the creativity of employees from several departments to draw up alternative plans that allow higher cost reductions.

Target costing and others techniques of costing:

Target costing uses a variety of techniques and methodologies to manage product design and cost. One of the primary techniques, value engineering, is utilized to identify the primary and

secondary functions of a product. The multidisciplinary team then uses this information to identify innovative means of providing a function and/or providing it at a reduced cost. Teardown analysis and reverse engineering is frequently employed to perform comparative analyses of competitors' products' functionality, quality, cost, and design and production innovations. Functional cost analysis is used to take the value customers assign to each function and allocate a product's target cost to its functions and components. The design team applies value engineering to reduce the cost of each function and component whose cost exceeds its allowable cost. For example, the cost of a function may be reduced by finding alternative means for its implementation. Conversely, the cost of a component may be reduced either by using less expensive material and/or using fewer parts. The multidisciplinary team begins to work early with suppliers to receive their input into the design process and to communicate the firm's expectations of purchased components' costs and quality. Finally, value engineering is used to examine the production processes used to manufacture a product and its components to enhance functionality and/or reduce cost. Other techniques, such as Quality Function Deployment, Design for Manufacture and Assembly, and Cost Deployment Flowcharts, are often used in the TC. (Robert Kee, 2010, P.205)

Implement Target costing in a manufacturing company:

In order to implement TC in a manufacturing firm and to determine the target costs for a product, the following steps must be following: (Florian G. H. Behncke, et al., 2014, P.782)

- The first step: focuses on the reorientation of the culture and attitudes within a firm towards market-driven pricing as basis for the deduction of allowable costs.
- The second step: describes the establishment of a market-driven target price that is derived from various market factors (e.g. market position, competitors).
- The third step: calculate a target. Another factor besides required profit margins of the firm is taxes and indirect costs.
- The fourth step: describes the balancing between target costs and requirements. The latter are major cost drivers. A comprehensive understanding of requirements through methods (e.g. conjoint analysis, quality function deployment).
- The fifth step: deals with the implementation of target cost through establishing a corresponding process including activities to support target costs and a team-based organization to integrate other disciplines (e.g. marketing, manufacturing).
- The sixth step: focuses on the generation of ideas and the analysis of alternatives for potential cost reductions.
- The seventh step: a product cost model is composed to support the decision making. Thereby, the model provides an overview of product costs from different perspectives.
- The eighth step: suggests the use of tools like design-for-X to reduce costs. As a major share of a products' cost relate to indirect costs.
- The ninth step: suggests their reduction.
- The tenth step focuses on the implementation of target cost to the core of the cooperation by an evaluation of the measures.

TC is not just a cost reduction technique or control framework, but part of a comprehensive strategic profit management system including value analysis and value engineering. Implementing TC within the supply chain required substantially more effort and discipline than using standard costing. All supply chain partners must find ways to reduce costs as they design, manufacture, and distribute components. (Marilyn M. Helms et al, 2005, P. 49)

Definition of Manufacturing Costs:

The researchers define manufacturing costs is the sum of costs of all resources consumed in the process of producing the product.

Manufacturing costs are classified into three basic elements as follows: (Edward J. Vanderbeck, 2010, PP.15, 16)

- Direct Materials costs: The materials that become part of a certain manufactured product and can be readily identified with that product are classified as direct materials. According to E.M. Shehab & H.S. Abdall, (2001, P.343) the material selection is an important stage and complicated one that is made early in the design process. There are many constraints for material selection, such as product functionality, material cost, and the type of manufacturing process.

- Direct Labor cost: The labor of employees who work directly on the product manufactured, such as machine operators or assembly-line workers, is classified as direct labor.

- Overhead costs: Factory overhead, also known as manufacturing overhead and factory burden, includes all costs related to the manufacture of a product except direct materials and direct labor. Factory overhead as a percentage of total manufacturing costs.

How to reduce the Manufacturing costs:

To reduce the manufacturing costs it is necessary to reduce the labor requested, by implementing extensive automatization of as many of the operations taking place in the plant as possible. A reduction of the cost of the major equipment must also be performed, by a simplification of design based in the extensive knowledge accumulated. The equipment cost can also be reduced when the size of the equipment, and hence the production capacity, is increased. (F.G. Ación, et at., 2012, P.1351)

Gavin Sinclair et at., (2001, P.28) claimed that the product's unit cost tends to fall by a constant percentage with each doubling of cumulative output or time in production. Not only does this hold for a wide range of products and methods of production, but it persists when controls are introduced for the scale of production and the amount of effort devoted to process engineering and R&D. The ubiquity of this relationship, known as the "learning" or "experience" curve, has led many to infer that production experience causes cost reduction. Building on the idea of progressive cost reduction as a byproduct of production, economic theorists have claimed "learning by doing" to be a source of increasing returns and consequent first-mover advantages in models of firm output strategy, industry evolution, international trade, and national economic growth.

On the other hand supplier relationship management coupled with strategy integration was the only practice found to be significantly associated with cost efficiency. Descriptions of supplier relationship management practices have tended to emphasize their benefits toward cost reduction and efficiency attained primarily through increased purchasing volume leverage and through reduced uncertainty and disturbance in product sourcing and replenishment cycles. (Morgan Swink. et at, 2005, P.446)

Section three: The Empirical Study:

Procedures of the empirical study include the following:

Data collection procedures:

Primary data was collect using questionnaire; the questionnaire was initially written in English language and then translated to Arabic. Next, the questionnaire was reviewed by three academics to ensure that content and translation was appropriate for the study purpose. Based on the received comments, the questionnaire was revised as needed. The questionnaire was distributed by the researchers to sample, the sample consist of financial managers, financial accountant, cost accountants, internal auditors, production engineers, managers, and other careers that related to the topic of study, and then it was collected for analysis.

Data analysis technique:

The data collected was coded, and analyzed through SPSS. Descriptive statistics such as percentages, mean, standard deviation, Chi-Square, degree of freedom, and value of probability was used to testing the hypothesis of study.

Population and Sample Selection:

The study targeted Sudanese Industrial companies that working in Khartoum state, and that had adopted or willing to adopt the concept of Target costing. Therefore, the population of this study will consist of employees of twelve industrial companies, and its community consisted of financial managers, financial accountants, cost accountants, internal auditors, Production engineers, Managers, and other jobs relate to the topic of study.

Sampling procedure:

Respondents sample was determine using stratified random sampling technique to ensure that different groups of a population are adequately represented in the sample.

Sample size:

The total number of questionnaires distributed (120), there are (30) disqualified as not eligible for analysis as a result (90) samples were recovered and analyzed, as (75%) of the total number of questionnaires distributed.

Reliability and validity of the study:

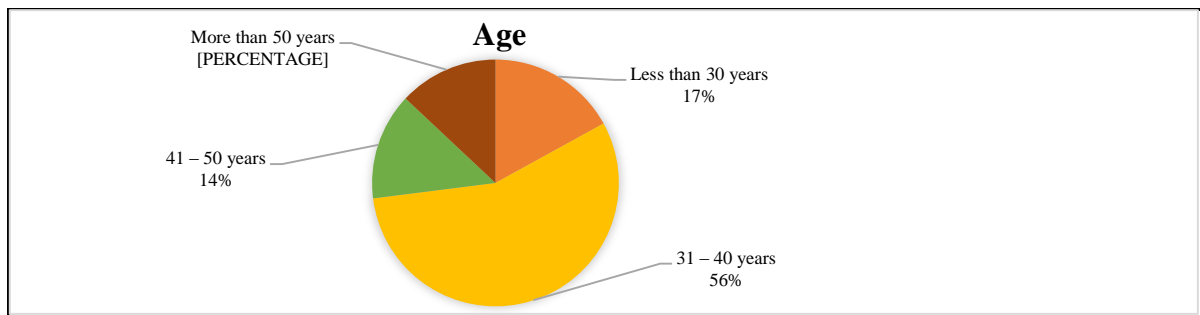
The researchers have made the following statistical analysis to verify the validity and reliability of the questionnaire.

Age:

Table (1):The distribution of frequency and percentage of the age groups of study sample

Age	Frequency	Percentage (%)
Less than 30 years	15	17%
31 – 40 years	50	56%
41 – 50 years	13	14%
More than 50 years	12	13%
Total	<u>90</u>	<u>100%</u>

Source: prepared by the researchers from the questionnaire's , 2018



Source: prepared by the researchers from the questionnaire's , 2018

Figure (1):The distribution of percentage of the age groups of study sample

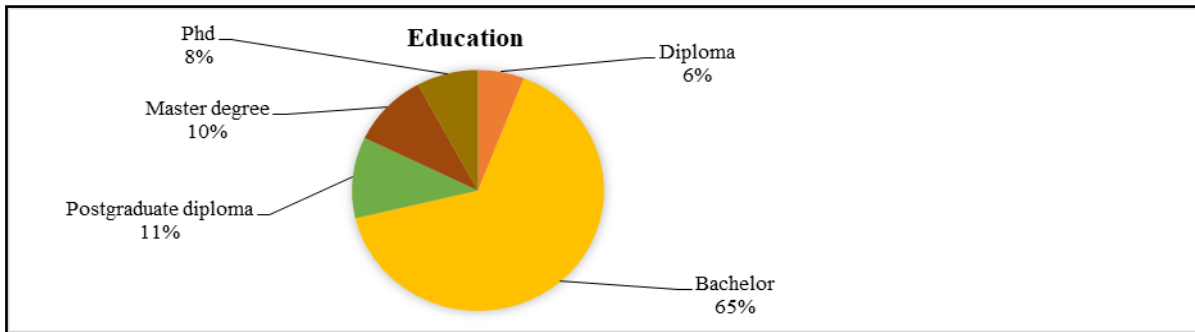
The result presented by table (1) and figure (1) illustrate the Age of the study sample indicated that 17% of age groups are less than 30 years, 56% of age groups their age range between (31-40 years), 14% of age groups range between (41- 50 years), and finally 13% of age groups their age is more than 50 years. Consequently, this result indicated that the age of the majority of the study sample range between (31-40 years) indicating the maturity of the study sample and hence increasing the reliability of the study.

Education:

Table (2):The distribution of frequency and percentage of the Education of study sample

Education	Frequency	Percentage (%)
Diploma	5	6%
Bachelor	59	65%
Postgraduate diploma	10	11%
Master degree	9	10%
PhD	7	8%
Total	<u>90</u>	<u>100%</u>

Source: prepared by the researchers from the questionnaire's , 2018



Source: Prepared by the researchers from the Questionnaires ,2018

Figure (2):The distribution of percentage of the Education of study sample

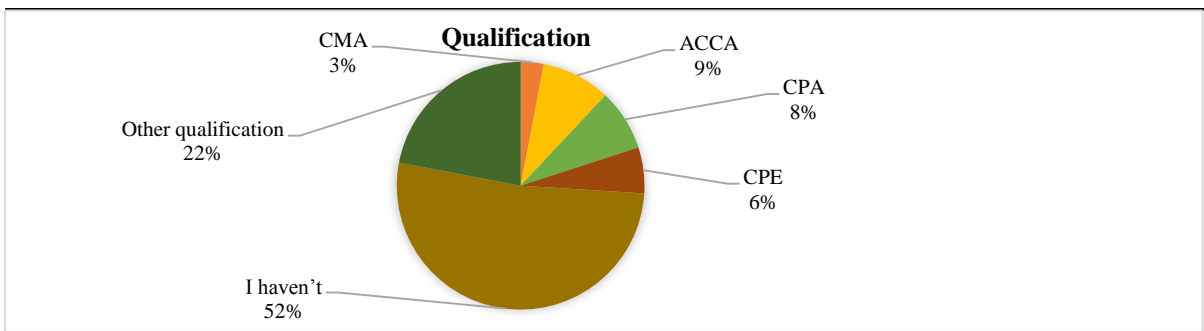
The results showed by table (2) and figure (2) illustrate the Education of the study sample pointing that 6% from the study sample have got diploma, while 65% have got a bachelor degree, 11% have got a postgraduate diploma, 10% from the study sample hold a master degree, and 8% from the study sample hold PhD. Accordingly to this analysis that more than 94% are holding a bachelor or postgraduate certificates, therefore it increases the reliability of this study.

Qualification:

Table (3):The distribution of frequency and percentage of the Qualification of study sample

Qualification	Frequency	Percentage (%)
CMA	3	3%
ACCA	8	9%
CPA	7	8%
CPE	5	6%
I haven't	47	52%
Other qualification	20	22%
Total	<u>90</u>	<u>100%</u>

Source: prepared by the researchers from the questionnaire's , 2018



Source: prepared by the researchers from the questionnaire's , 2018

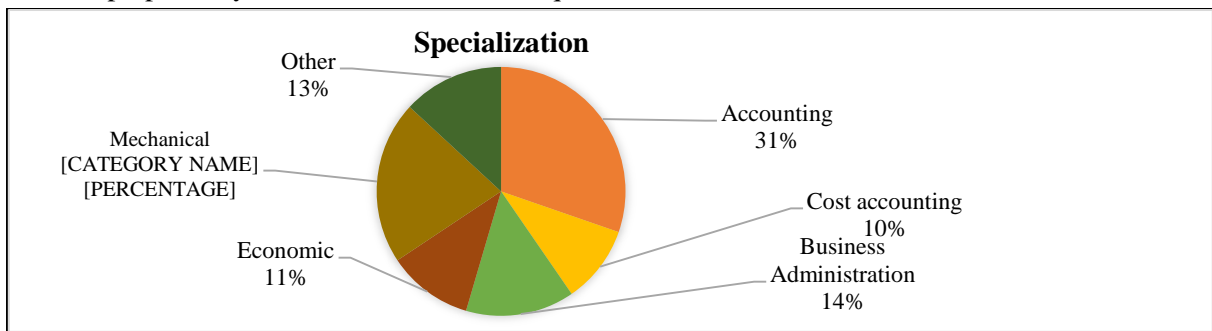
Figure (3):The distribution of percentage of the Qualification of study sample
 The results showed by table (3) and figure (3) illustrate the qualification of the study sample pointing that 3% from the study sample have got CMA, while 9% have got ACCA, 8% have got CPA, 6% from the study sample hold CPE, 52% from the study sample haven't hold any qualification, 22% from the study sample hold other certificates. According to this analysis more than 48% are holding qualification certificates, therefore it increases the reliability of this study.

Specialization:

Table (4):The distribution of frequency and percentage of the Specialization of study

Specialization	Frequency	Percentage (%)
Accounting	27	31%
Cost accounting	9	10%
Business Administration	13	14%
Economic	10	11%
Mechanical Engineering	19	21%
Other	12	13%
Total	<u>90</u>	<u>100%</u>

Source: prepared by the researchers from the questionnaire's , 2018



Source: prepared by the researchers from the questionnaire's , 2018.

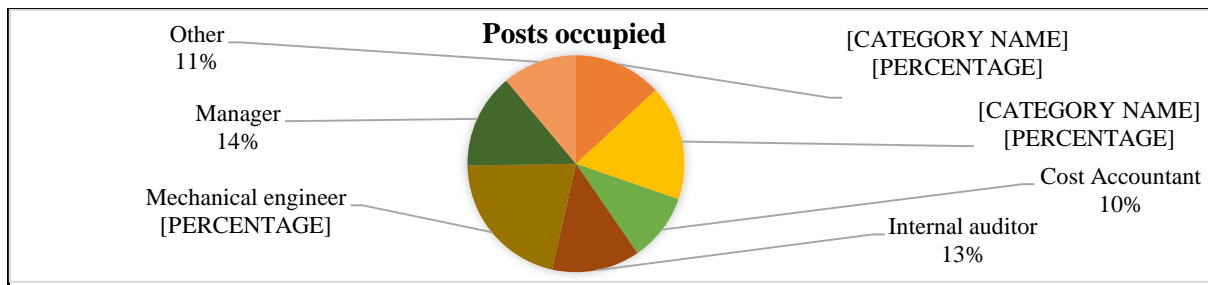
Figure (4):The distribution of percentage of the Specialization of study
 The results showed by table (4) and figure (4) illustrated the specialization of study sample, which showed that 30% from sample specialized in accounting, while 10% specialized in cost accounting, 14% specialized in business administration, 11% specialized in economic, 21% specialized in engineering , and finally 13% have others' specialization. According to this analysis more than 87% are specialized in accounting, cost accounting, business administration, economic, and mechanical engineering, therefore it increases the reliability of this study.

Posts occupied:

Table (5):The distribution of frequency and the percentage of the Posts occupied by study sample

Position	Frequency	Percentage (%)
Financial Manager	12	13%
Financial Accountant	15	17%
Cost Accountant	9	10%
Internal auditor	12	13%
Mechanical engineer	19	22%
Manager	13	14%
Other	10	11%
Total	<u>90</u>	<u>100%</u>

Source: prepared by the researchers from the questionnaire's , 2018



Source: prepared by the researchers from the questionnaire's , 2018

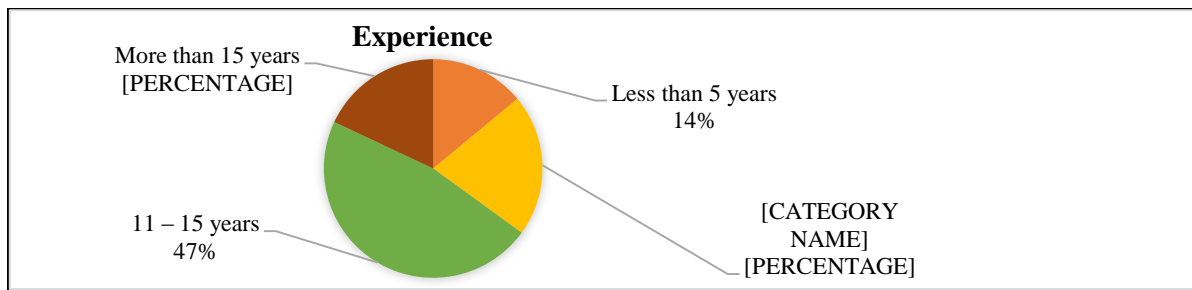
Figure (5):The distribution of the percentage of the Posts occupied by study sample Table (5) and figure (5) showed that 13% of study sample are financial managers, 17% are financial accountants, 10% are cost accountants, 13% are Internal auditors, 22% are mechanical engineers, 14% are managers and finally 11% occupy others jobs. According to this analysis more than 89% are (financial managers, financial accountants, cost accountants, internal auditors, mechanical engineers and managers); therefore it increases the reliability of this study.

Experience:

Table (6):The distribution of frequency and percentage of the years of Experience of study

Experience (years)	Frequency	Percentage (%)
Less than 5 years	13	14%
6 – 10 years	19	21%
11 – 15 years	42	47%
More than 15 years	16	18%
Total	90	100%

Source: prepared by the researchers from the questionnaire's , 2018



Source: prepared by the researchers from the questionnaire's , 2018

Figure (6):The distribution of frequency and percentage of the years of Experience of study The results showed by table (6) and figure (6) illustrated the distribution of frequency and percentage of the years of experience of study sample, and showed that 14% from study sample have got five or less years of experience, 21% have got (6-10) years of experience, 47% have got (11-15) years of experience, 18% have got more than 15 years of experience. Consequently, indicating that the majority of the study sample years of experience ranged from (6 - More than 16 years), this means that about 86% of the sample has got more than five years of experience, indicating that their knowledge about the work nature is so high, and then their opinion about the statements is considerable. Also, this supports the reliability of this study.

Testing of hypothesis:

Hypothesis: there is relationship between Targets costing (TC) and reduction the manufacturing costs.

s phrases' Table (7): The percentage answers of study sample about the study

Phrases	Agree	Strongly agree	Neutral	Disagree	High disagree
The price of products under the target costing provides equity in the pricing.	33%	57%	4%	3%	2%
Sets a target price which requires reducing the materials cost.	40%	38%	10%	8%	4%
Achieve a target price which requires reducing wages costs.	26%	37%	17%	11%	10%
Achieving target price require reducing overhead costs.	36%	40%	12%	3%	9%
Achieving the target profit margin require to reduce raw materials costs.	33%	40%	14%	6%	7%
Achieving the target profit margin require to reducing the wages costs.	43%	41%	8%	3%	4%
Achieving the target profit margin require to reduce overhead costs.	33%	44%	11%	4%	7%
Allowable costs achieves by reducing the costs of raw materials.	47%	39%	4%	3%	7%
The allowable cost achieve by reducing the wages costs.	37%	44%	11%	4%	3%
Allowable costs achieves by reducing the overhead costs.	42%	50%	2%	3%	2%

Source: prepared by the researchers from the questionnaire's , 2018

The results showed by table (7) percentage of answer of the study sample about the first phrase (57%) strongly agree, while (40%) agree about the second phrase, (37%) agree about the third phrase, (40%) agree about the fourth phrase, (40%) agree about the fifth phrase, (43%) high agree about the sixth phrase, (44%) agree about the seventh phrase, (47%) strongly agree about the eighth phrase, (44%) agree about the ninth phrase, and 50%) strongly agree about the tenth phrase. All that indicated to that the majority of respondents are strongly agreed to the positive to hypothesis.

Table (8): The means, standard deviation, Chi-Square, degree of freedom, probability value of the study's phrases

No	Phrases	Means	STD	Ch ²	D.F	P. value
1	The price of products under the target costing provides equity in the pricing.	3.92	0.90	32.12	3	0.00
2	Sets a target price which requires reducing the materials cost.	4.11	0.82	28.51	3	0.00
3	Achieve a target price which requires reducing wages costs.	4.10	0.71	68.71	4	0.00
4	Achieving target price require reducing overhead costs.	3.97	0.77	70.12	3	0.00
5	Achieving the target profit margin require to reduce materials costs.	4.08	0.84	40.32	3	0.00
6	Achieving the target profit margin require to reducing the wages costs.	3.71	0.67	51.51	3	0.00
7	Achieving the target profit margin require to reduce overhead costs.	4.17	0.92	41.47	4	0.00
8	Allowable costs achieves by reducing the costs of materials.	4.02	0.86	61.58	3	0.00
9	The allowable cost achieve by reducing the wages costs.	3.13	0.78	68.34	3	0.00
10	Allowable costs achieves by reducing the overhead costs.	4.11	0.72	27.59	3	0.00
Total phrases		<u>3.93</u>	<u>0.80</u>	<u>50.34</u>	<u>3.20</u>	<u>0.00</u>

Source: prepared by the researchers from the questionnaire's , 2018

- Table (8) illustrated the mean, standard deviation, Chi-Square, degree of freedom, and probability value of answers of the study sample about the first phrase, the mean equal (3.92) and this is greater than the default mean (3), also it shows that the standard deviation equal (0.90) is less than the default (1) , and the probability value of the question is less than

- (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “the price of products under the target costing provides equity in the pricing”.
- The table shows the answers of the study sample about the second phrase, the mean equal (4.11) and this is greater than the default (3), also it shows that the standard deviation equal (0.82) is less than the default (1), and the probability value of the question is less than (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “they sets a target price which requires reducing the materials cost”.
 - The table shows the answers of the study sample about the third phrase, the mean equal (4.10) and this is greater than the default (3), also it shows that the standard deviation equal (0.71) is less than the default (1), and the probability value of the question is less than (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “achieving a target price which requires to reduce wages costs”.
 - The table shows the answers of the study sample about the fourth phrase, the mean equal (3.97) and this is greater than the default (3), also it shows that the standard deviation equal (0.77) is less than the default (1), and the probability value of the question is less than (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “achieving target price require to reduce overhead costs”.
 - The table shows the answers of the study sample about the fifth phrase, the mean equal (4.08) and this is greater than the default (3), also it shows that the standard deviation equal (0.84) is less than the default (1), and the probability value of the question is less than (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “achieving the target profit margin require to reduce materials costs”.
 - The table shows the answers of the study sample about the sixth phrase, the mean equal (3.71) and this is greater than the default (3), also it shows that the standard deviation equal (0.67) is less than the default (1), and the probability value of the question is less than (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “achieving the target profit margin require to reducing the wages costs”.
 - The table shows the answers of the study sample about the seventh phrase, the mean equal (4.17) and this is greater than the default (3), also it shows that the standard deviation equal (0.92) is less than the default (1), and the probability value of the question is less than (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “achieving the target profit margin require to reduce overhead costs”.
 - The table shows the answers of the study sample about the eighth phrase, the mean equal (4.02) and this is greater than the default (3), also it shows that the standard deviation equal (0.86) is less than the default (1), and the probability value of the question is less than (0.05) indicating that all answers of study sample go to positive direction and agreed to the statement “allowable costs achieves by reducing the costs of materials”.
 - The table shows the answer of the study sample about the ninth phrase, the mean equal (3.13) and this is greater than the default (3), also it shows that the standard deviation equal (0.78) is less than the default (1), and the probability value of the question is less than (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “allowable cost achieve by reducing the wages costs”.
 - Also the table shows the answers of the study sample about the tenth phrase, the mean equal (4.11) and this is greater than the default (3), also it shows that the standard deviation equal (0.72) is less than the default (1), and the probability value of the question is less than (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “allowable costs achieves by reducing the overhead costs”.

- Finally the researches realized that all means are greater than the default mean and equal (3.93), that indicates all means of phrases were in a positive direction; also it shows that the all standard deviations equal (0.80) is less than one, which indicates the similarity and homogeneity of answers of the study sample about the questions and pointed that the probability value of all questions is less than (0.05) indicating that all answers of study sample were in a positive direction and agreed to the statement “targets costing play positive role to reduction the manufacturing costs”.

Section four: Findings and recommendations.

Findings:

The study reached to the following findings:

- The results affirmed the positive and significant effect of target costing on reduction costs.
- The price of products under target costing provides justness in the pricing process.
- The majority of Sudanese industrial companies use traditional costing systems such as absorption costing, and break-even point analysis rather than target costing.
- Target costing can be applied during any stage of a product’s cycle. However the greatest benefit and resource saving are typically achieved early in design stages.
 - Target costing is a cost management system that incorporates market demands and constraints into a product’s development.
 - Achieving the target profit margin require reducing all cost elements.
 - Achieving target price require reducing all cost elements.
 - To achieving target costing; beginning with price that customers are willing to pay to product and then deducting the profit margin to determine the product’s allowable cost.
 - The Sudanese industrial companies made relatively much use of costing techniques similar to the concept of target costing, but they fail to apply the target costing technique.
 - Sudanese industrial companies possess some of the requirements needed for using the target cost approach.

Recommendations:

According to the above findings, the study recommends:

- There is a great need for adopting target costing to provide more accurate cost information for manufacturing companies.
- applying in pricing process rather than traditional methods, owing to achieve the reduction of manufacturing costs.
- Sudanese companies should be focus on training for employees to modern methods in pricing and costing such as target costing technique.
- In order to achieve the target costing, the companies should be concerned for letting its costs incurred by product through the lifecycle.

Recommendations for further studies:

Should researchers think and discuss about the target costing, integration with other modern techniques such as value engineering, Activity based costing, and just-in-time.

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