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The Impact of Time- Driven Activity-Based Costing (TDABC) on Improve of Product Value

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ABSTRACT

The current research addressed the impact of time-driven activity-based costing technique (TDABC) on improving the value of products in the industrial firms in Kurdistan Region-Iraq. The main importance of the study was the possible apply of the (TDABC) in the industrial firms in Kurdistan Region-Iraq and their contribution to cost reduction (CR), and improving each of customer satisfaction (CS), productivity (PRO), product quality (PQ), and competitive price (CP). Due to traditional cost systems' inability to compete and correctly allocate overhead costs and also, they have been unable to keep up with changes in the business environment. This study attempts to identify the concept, importance, and goals of TDABC, highlight them in the cost reduction, increasing product quality, improving customer satisfaction, increasing productivity, and improving product comparative price as well as measure the correlation between TDABC and dimensions of improving product value. This research study it uses a statistical data analysis program (SPSS 25) to measure and analyze the data it gets from questionnaires and surveys that it is distributed on industrial firm in the Kurdistan region. This study distributed 275 questionary forms on industrial firms and collected 215 forms that

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were used to indicate results and analysis. The results of the study's analysis indicated a positive and significant relationship between TDABC and improving product value. As a result, it is shown that the relationship between TDABC and dimensions of improving product value like (cost reduction, customer satisfaction, productivity, product quality, and competitive price) is positive and significant. Additionally, the regression results between TDABC and improving product value by dimensions like (cost reduction, customer satisfaction, productivity, product quality, and competitive price) is similarly positive and significant. Finally, the study recommends that future researchers test time-driven activity-based costing in the public sector to investigate the impacts of this technique on reducing costs and improving quality of service when providing services.

1.Introduction and Identification of the Problem

1.1 Introduction

The current study focuses on the negative aspects of using the traditional cost management approach in determining manufacturing factory overhead costs in the industrial firms in Kurdistan Region, Iraq, by indicating its impact on improving the value of the product by increasing quality and reducing costs in the industrial firms in Kurdistan Region, Iraq.Management control of activity costs and reducing production costs are most important not only for increasing profit margins, but for improving as a component of competitiveness for new enterprises by developing dimensions of quality and cost reduction, which typically compete fiercely on the global market. Cost management techniques calculate the cost of different relevant cost objects of industrial firms by assigning and tracing indirect and direct costs. through which the study interprets the impact of applying one of the new cost management techniques and its impact on improving the value of the product by increasing the quality and reducing costs. In this regard, (Kaplan and Anderson 2004) announced a new technique called time-driven activity-based costing. This approach was

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announced as a revolutionary technique in the field of figuring out costs. On the other hand, (Oleg, 2011) indicated that the principle of this new cost management technique is based on changing of cost drivers to time equation expressing time required for performing each activity as is sometimes the function of sometime drivers. The characteristics are called 'time drivers', because they govern how much time is spent on an activity (Rashid, 2019). The time equations are new ways of measuring how much time drivers manage the time that is spent by each activity. Time-Driven Activity-Based Costing (TDABC) is one of the most accurate and simplified techniques in cost accounting because of its feasible integration into the management system, its ability to provide timely and precise information, and its straightforward interpretation of data. This is especially true when fast changes in technologies lead to the development of processes and growth in providing more accurate information for decision-making on overhead costs, improving product quality, and reducing costs. That justifies the necessity of the methodology applied to allocate and distribute manufacturing factory overhead costs objectively by time driven activity-based costing (TDABC).

1.2 Research Problem

As a result of current study highlight, some techniques and methods related to improve product value, such as time-driven activity-based costing were depended.

The specific problem of this study focuses on the following:

Main question: What is the role of the implementing of time-driven activity-based costing (TDABC) in improving product value (cost reduction, customer satisfaction, productivity, product quality, competitive price) at industrial firms in Kurdistan Region-Iraq?

Q1: What is the role of the implementing of time driven activity-based costing (TDABC) in improving product value by Cost reduction at industrial company in Kurdistan Region?

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Q2: What is the role of the application of time driven activity-based costing (TDABC) to Improve Value of Product by customer satisfaction at industrial company in Kurdistan Region?

Q3: what is the role of the application of time driven activity-based costing (TDABC) to Improve Value of Product by productivity at industrial company in Kurdistan Region?

Q4: what is the role of the application of time driven activity-based costing (TDABC) to Improve Value of Product-by-product quality at industrial company in Kurdistan Region?

Q5: what is the role of the application of time driven activity-based costing (TDABC) to Improve Value of Product by competitive price at industrial company in Kurdistan Region?

1.3 Research objective

The main objective of the study is to conduct the impact of time-driven activity-based costing technique on improving product value in the industrial firms in Kurdistan region- Iraq. It also shows how the time-driven activity-based costing technique affects the creation of new products and the improvement of previous ones. However, in order to answer the research problem.

The following are some of the precise goals that this study aims to achieve:

1-The objective of this research is to provide a theoretical presentation of technique of time driven activities basis cost TD-ABC, their implementing in the research sample of industrial firms and their impact on improving the value of the product and enhancing the competitiveness of the research sample planned.

2- Identifying the main important points that are the basic justification for applying the determination of the cost technique according to time-driven activity (TDABC) in the sample of industrial firms.

3-The research aims to explain the impact of time-driven activity-based costing technique on the cost of this product for the advancement of the industrial sector as the cornerstone of society, the possibility of cooperation for the purpose of developing and managing the costs of their products.

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1.4 Research importance

The main significance of this study is to find out how technique of time-based activity-based affect the improved product value. In addition, this study, is an attempt to demonstrate and find the impact of time-driven activity-based costing on improving product value and answering the questions of the problem study, selected variables influence improving product value in sample of an industrial companies in Kurdistan.

By time-driven activity-based costing, this study helps and leads to lowering costs, accessing competitive prices, increasing productivity, improving product quality, and making customers satisfied.

scientific importance: the focus of this study is on a new topic that has not been thoroughly investigated before. The findings of this study would serve as a foundation or background study for further development of the concept, either directly or in areas that are related to it. Also, this study provides a new recommendation for future studies to use a new methodology and techniques for finding and better-improving product value.

practical importance: The practical importance of this study is to improve a new subject that will have an influence on the organization's income. In addition, the results of this study have a great impact on increasing profit and better developing firms due to the fact that the results provide information to managers and decision makers for application and a better understanding of how to improve product value by applying managerial accounting instruments.

1.5 Research hypotheses

The following is the main hypothesis of this study:

Main hypothesis. There is a significant role for the applying of time-driven activity-based costing (TDABC) in improving the value of products (Cost reduction, customer satisfaction, productivity, product quality, competitive price) at industrial company in Kurdistan region.

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H1: There is a statistically significant relationship between implementing of time-driven activity-based costing (TDABC) and improving the value of products by Cost reduction in the industrial firms in the Kurdistan region?

H2: There is a statistically significant impact of applying time driven activity-based costing (TDABC) and improving the value of products by Cost reduction in the industrial firms in the Kurdistan region?

H3: There is a statistically significant relationship between the implementing of time driven activity-based costing (TDABC) and improving the value of products by customer satisfaction in industrial firms in the Kurdistan Region?

H4: There is a statistically significant impact of applying of time driven activity-based costing (TDABC) and Improving the Value of Products by customer satisfaction in industrial firms in the Kurdistan region?

H5: There is a statistically significant relationship between applying time driven activity-based costing (TDABC) and Improving the Value of Product by productivity in the industrial firms in Kurdistan region?

H6: There is a statistically significant impact of applying of time driven activity-based costing (TDABC) and Improving the Value of Products by productivity in the industrial firms in the Kurdistan region?

H7: There is a statistically significant relationship between applying of time driven activity-based costing (TDABC) and Improving the Value of Products by product quality in the industrial firms in the Kurdistan region?

H8 There is a statistically significant impact of applying of time driven activity-based costing (TDABC) and Improving the Value of Product-by-product quality in the industrial firms in the Kurdistan region?

H9 There is a statistically significant relationship between applying of time driven activity-based costing (TDABC) and Improving the Value of Product by competitive price in the industrial firms in the Kurdistan region?

H10 There is a statistically significant impact of applying the time driven activity-based costing (TDABC) and Improving the Value of Product by competitive price in the industrial company in the Kurdistan region?

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1.7 Research Variables

This study addresses the impact of TDABC on IPV in industrial firms in the Kurdistan region. In general, this research study used a simple regression model to indicate the impact of an independent variable on a dependent variable. In addition, this research study used TDABC as an independent variable to determine the impacts on the dependent variable and introduced IPV as an independent variable by considering cost reduction, customer satisfaction, productivity, product quality, and competitive price.

2. Methodology of the Study and Theoretical Review

2.1 Methodology of Study

This study adopts both qualitative and quantitative methods to describe the impact of managerial accounting technique like time driven activity-based costing on improving product value. This study range includes new work and innovation to provide a general framework for future study. In addition, the qualitative method involves reviewing a range of studies in order to construct a number of available studied theoretical models that provide a general framework for this study. But with the quantitative method, it uses a statistical data analysis program to measure and analyze the data it gets from questionnaires and surveys. it uses a statistical data analysis program (SPSS 25) to measure and analyze the data it gets from questionnaires and surveys that it is distributed on industrial firm in the Kurdistan region. This study distributed 275 questionary forms on industrial firms and collected 215 forms that were used to indicate results and analysis.

2.2 Time-Driven Activity-Based Costing on Improving Product Value

TDABC is a method of micro-costing which was first presented by Kaplan and Anderson in 2007. TDABC employs a time estimate for the utilization of each resource to allocate overhead costs to products. also, introduced two central concepts of the TDABC approach such as capacity cost rate and time (Lumbwe, et al, 2022). Time is used by TDABC as a proxy for resource consumption by

processes that cost objects have sparked in order to produce outputs. Depending on the requested service or product, the kind of customer, the delivery location, and a number of other variables, these activities may differ. The time to complete any activity and its variations is treated as an additive factor (Adenle & Raul, 2014).

Due to the increase in competition in products between organizations in the market. Controlling and managing costs in an organization has gained much more significance in recent years compared to the past for improving products and service (Abdullah & Fatah, 2020). Therefore, organizations are making more efforts to specify best new cost management approaches for their production systems to manage their product costs more effectively. (TDABC) techniques appears as a technique developed in order to provide solutions to these criticisms. The TDABC technique stands out with its ease, especially in terms of capacity control, while preserving the basic features of the ABC techniques. The most important feature of the TDABC method is that it adopts time equations like a management tool for managing costs.

TDABC is a new method in cost & managerial accounting that is easier and cheaper than ABC techniques in application. In addition, when using TDABC techniques, resource usage is only caused by the time driver it takes to carrying out the activity. In TDABC, calculate the activity costs of products and services by the concept that those that consume costs or resources are activities that can be estimated and measured in the amount of required time. This is how the TDABC method determines the activity costs of products and services. TDABC is used to compute indirect costs (Hartono, 2021) (Azmi, 2018). Kaplan and Anderson are mentioned in 2004, 2007, with developing the TDABC is a more "transparent methodology, scalable, easy to implement and update" to improve product overhead costs, which allows managers to collect and obtain important accurate information about costs and profitability quickly and inexpensively. however, TDABC is presented as a simpler and more affordable system for implementation than the preview approaches. Additionally, pricing decisions have become more flexible and reliant on numerous optimal product mixes, which has pushed management to search for new cost approaches in order to

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improve performance and raise the profitability of organizations (Gorzen-Mitka& Okreglicka, 2014). Furthermore, in the cost accounting, Kaplan & Anderson mentioned to implementing TDABC to better improve overhead costs on production and raise profitability (Rashid, 2017). Additionally, for greater improvement of product value, TDABC is the easiest approach to implement and improve product costs. In addition, it is a method that may improve product costs. TDABC is a much more simplified and accurate approach in cost because of its simple integration into the cost management system, its ability to provide timely and accurate information, the lower cost of maintenance, and its straightforward interpretation of data. For these reasons, TDABC is regarded as a much more accurate and simplified method in cost. This is especially true in situations where rapid technological advancements toward automated operations have resulted in a considerable increase in the share of overhead expenditures (Medeiros et al., 2017). the time-driven activity-based costing system can be considered a tool for developing and improving performance in enterprises (Mohammed & Mohsen, 2022). Time-Driven Activity-Based Costing decreases the amount of data that must be collected and instead requires simple estimates of: (1) the capacity of dedicated resources in the real world and their cost; and (2) the unit times needed to complete transactional operations. The process of putting costs on activities whose results can be predicted with more accuracy. Park, et al, in 2019 investigate the calculating marketing costs by using time driven activity-based coasting and it is indicated that TDABC is a helpful technique that can reduce the costs of marketing resources and support effective marketing decision making in a variety of contexts. These contexts include the restructuring of marketing processes, the choices of marketing mix, the profitability of customers, and price differentiation for different types of customers. also, Nabil& Yasin in 2017 investigate "the impact of applying the time driven activity-based costing-TDABC- model on improving the efficiency" of performance on industrial corporations in Jordanian. According to the findings, TDABC is able to make use of technological advances on the basis of the activity charts and reflect them on pricing decision making processes in industrial firms. However, they also show that senior management and cost accountants in the

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sample studied had no desire in the short run to change the current system of cost accounting due to the additional costs of using the new cost accounting techniques. According to (Tatik, et al, 2021), it is used by TDABC to find and calculate the rental price of hotel rooms, as well as compare and find out the difference with the traditional costing system. Because the findings indicated that the allocation of costs for each activity based on the time required produces a more precise and efficient cost of renting a room, it is evident that the method of TDABC can be adopted by the hotel. In addition, the average efficiency rate of each room is between 8% and 30% of the current price of traditional techniques. This makes it possible for the hotel to save money by using this method.

Because the cost of production is the primary factor that goes into determining the selling price, the calculation of the optimal selling price needs to be supported by an accurate calculation of the cost of production (Budur et al., 2018). Production cost play an important role in determining selling price (Bayangkara, 2019). In addition, TDABC defined activity costs of products and services with the idea that consumption costs or resource are activities that can be measured and assessed in the amount of time required. Because that's how the activity costs of products and services are calculated (Azmi, 2018).

It can be seen that time-driven activity-based costing is now the best and cheapest method for implementation in an organization, and this method provides more accurate information on the products to make and run a strategic decision. In addition, with developing industrial technology, this system has corresponding product technology instruments. However, the TDABC system provides more accurate information in a short time, so there is no need to spend more time for collecting cost data. (Rashid & Sabir Jaf, 2023).

2.3 Product value and its dimensions

A new product's improvement is related to numerous factors that affect its success or failure. These numerous factors can influence to a product likes its functionality, product quality, innovativeness, a firm like its development, top management support, access to resources, and a market factor like its saturation, the strength of competition, and client attitudes (Marcin, 2022).

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Business analytics can assist decision-makers in determining the probability that a new product will succeed by highlighting relationships between product, market, and company characteristics and their effects on a new product's expected sales income and price. The use of big data analytics for assessing the performance of a product development effort, including the evaluation of data quality (Aljumah, et al, 2021), (Marcin, 2022).

As a result, it is possible to conclude that the goal of developing and improving product value is to increase profitability, which promotes quality of production, reduces production costs, and meets customer requirements. In addition, organizations, especially industrial organizations and service companies, are usually doing their best to contribute and improve products and services to stay in the market and sustainably with new products and services. However, TDABC is another method directly affecting overhead costs that leads to providing accurate information on products while reducing selling prices.

2.3.1 Cost Reduction

Therefore, strategic cost reduction is defined according to Shields and Young: Strategic cost reduction is a long-term approach that integrates competitive strategy, technological strategies, human resource management strategies, and organizational design considerations to provide a focused and coordinated basis for sustaining competitive advantage (Shields and Young, 1992; Rashid, 2018; Sabir, 2022) (Alexander,2012). Also, (Burcu, 2018), investigate that cost reduction and cost control are always in the most important of company agendas because it should be a long-term strategic approach in order to accomplish cost management goals. Cost reduction is the process of reducing costs required by a firm for the goal of making profit. It is beginning when cost control ends and considers that no cost is at its optimum and also, Value analysis is one of the most important cost reduction techniques. It is an organized techniques of specifying and eliminating unnecessary costs product incurred (Ben-Caleb, et al, 2019).

It can be concluded that cost reduction is a main dimension of improving product value because it has an effect on increasing target profits, value sales and cost

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object. The company is focusing on cost reduction to improve product value because it has an adverse impact on competitive pricing and increasing demand for products.

2.3.2 Product quality

According to Omar, 2020, it is indicated that the most important indicators of management in organizations is quality of products, as it has become one of the most important concerns of the organization and an important guide and an argument for selling like price. In addition, it is important to keep in mind that the company does not evaluate the quality of the product from its standpoint; rather, the quality of the product is evaluated from the standpoint of the customer (Budur et al., 2018).

It can be said that quality is one of the most important dimensions of product value. Therefore, quality leads to achieve and increase customers and sales rate and competitive in the market. New cost management techniques, raw material, technology and designed has a significant affect to improve product quality.

2.3.3 Customer Satisfaction

Customer satisfaction usually being used as a tagline by a business to entice customer and buy its products or use the services (Rashid, 2020). also, customer satisfaction is a state where customers are satisfied, whether on the quality of product or the overall interaction experienced by the customer (Karim et al., 2020). As a result, it is a positive reflection by a customer towards organization products (Budur et al., 2023). Achieving customer satisfaction should be the main goal for any organization. In addition, it has been mentioned before that from the financial standpoint, satisfied customers bring positive impact on the business' financial standings, because increased customer satisfaction improved financial performance (Mohammad & Mohd, 2020; Ismael et al., 2020). Furthermore, Customer satisfaction achieved when customers find that products or services meet or exceed their positive expectations (Minjee et al., 2018), (Jaf et al., 2015), (Budur, 2020).

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With the importance of customer satisfaction level increasing towards an organization, business has shifted its strategy to focus more on customer requirements. However, various perspectives for increasing customer satisfaction are implemented in order to achieve customer satisfaction (Quang, et al, 2018). Customer satisfaction is achieved when their wants and needs are being met by the business and organization. It must be ensured that the products or services that are provided are perfect in quality and most importantly, meet the needs of the target customer. however, Customers are also satisfied if company holds high ethical standards of products while conducting their business because a business must ensure that the products that it offers are perfect in quality and most importantly meeting the needs of the target customer (Shamsudin, et al, 2019). Furthermore, (Shamsudin et al., 2015) suggests that industrial firms must start to focus on being market driven and give priority to customer satisfaction as their utmost concern. The fact is that businesses exist because of customers. Industrial firms need to meet customer expectations and provide the best products on the market in order to gain loyalty (Mohammad, Mohd, 2020).

By understanding of the importance of customer satisfaction and the disadvantages of dissatisfied customers towards the company, businesses should take preparatory measures to ensure customer satisfaction is well maintained and improved. In addition, for promoting product value in the market, industrial firms must focus on the loyalty of customers for purchasing products, which is achieved by increasing quality, leading time to market, service militances and other factors related to product sustainability. the most significant factors that company must pay attention to, is the timeliness of interaction with customers. Therefore, the timeliness aspect covers the period from when customers engage with the business to buy a product or use the services provided up to the period taken by the business to assist customers in post-purchase issues and also organization should not treat every negative feedback as something bad but it must take it as a constructive criticism for a business to improve its operations. By doing this, organization will be much more

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flexible towards feedbacks and much more open to change (Mwakatumbula, et al, 2019), (Mohammad, Mohd, 2020).

It can be concluded that customer and customer satisfaction have a positive and significant impact on product value and target profit. achieving customer satisfaction by a company, that must be observed in business communication with customers to ensure customer satisfaction is achieved. In addition, worker experience in communicating with buyers, product quality, new products, new product design, and time to market are the most important indicators affecting customer satisfaction and improving.

2.3.4 Productivity

In a development country, increases in total industrial firms' productivity indicate a more efficient utilization of an economy's potential, which leads to an increase in that economy's long-term economic growth. also, with developing and increasing total productivity that leads to increase profitability due to reducing cost and wastage with increasing unit outputs. in addition, through competitive markets, which raises consumer purchasing power and leads to increasing profitability, on the other hand, increasing productivity has a significant and positive relation with lower cost for consumer because it is reducing cost and price of products (ILO, 2020).

It can be concluded that, productivity has a positive relation with improving product. As improving productivity leads to time cycle of products, reducing cost, better satisfaction customers, market competitiveness by leading time to market and increase the purchases possibility by customers.

2.3.5 Competitive price

A competitive price is a pricing strategy used by businesses to establish a market value for their products similar to their competitor's offerings.in addition, four essential components contribute to marketing: the product, promotion, distribution, and product price. The first three factors—product, promotion, and placement—combine to make up a company's attempt to add value to the market. The final component—price—differs significantly from the first three: It

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demonstrates the company's effort to obtain some value from the profits it generates. Effective pricing is the result of successful product development, promotion, and placement. Although the first three elements' poor execution can never be made up for by effective pricing, ineffective pricing can certainly restrict those efforts from being financially successful, that is why, The only direct factor that generates revenue and determines whether a product or service is successful or unsuccessful appears to be product pricing. (Thomas& Georg, 2018). A company reviews competitors in the market with similar products and selects a price that is competitive to encourage consumers to purchase their item" (IET, 2022).

It can be said that, product quality, time to market, new products, and product design are the most important factors affecting improving competitive price. Implementation of new cost accounting techniques such as concurrent engineering and time-driven activity-based costing in industrial companies leads to better improving product quality and other factors that is affecting on improving competitive price.

3. Data Analysis and Results

H1: Is there a statistically significant relationship between applying of Time Driven Activity-Based Costing (TDABC) and improving of product value by Cost reduction in the industrial firms in the Kurdistan region?

Table (1) A correlation (Pearson correlation test) between independent variables (TDABC) and dependent variable improve product value (IPV) by dimensions of cost reduction (CR), customer satisfaction (CS), productivity (PRO), quality of products (QU), competitive price (CP). (Authors primary data)

dependent variables	independent variables (TDABC)		
	Correlation	**Sig.**	**Sample**
CR	0.596	0.000***	210
CS	0.546	0.000***	210

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PRO	0.485	0.000***	210
QU	0.515	0.000***	210
CP	0.527	0.000***	210
Note: *, **and ***indicate significance at the 10%, 5%, and 1% levels, respectively			

The results from Table (1) indicate that there is a positive statistically significant correlation between the (TDABC and IPV by CR in industrial firms in the Kurdistan region), which is equal to (0.596), and that the significance value is equal to (0.000) and it is less than (0.05). there is a positive and significant correlation between the (TDABC and IPV by CR in an industrial firm in the Kurdistan region), in other words, means accepting the hypothesis (H1). The finding of the results confirms that there is a correlation between independent and dependent variables, from which it can be concluded that encouraging industrial economic firms by applying this technique leads to improving the quality of products on the market by reducing costs. The (TDABC) technique aims to improve the value of products on the market by cost reduction.

H2: Is there a statistically significant impact of applying the time driven activity-based costing (TDABC) has an impact on Improve Value of Product by Cost reduction in the industrial firms in the Kurdistan region?

Table (2) regression model results between TDABC and IPV by dimension CR.

Model	Coefficients				Model Summary		ANOVA Table	
	Unstandardized Coefficients		T Test	Sig	R^2	Adj.(R^2)	F Test	Sig.
	B	Std. Error						
Constant	1.749	0.210	8.333	0.000***	0.353	0.353	114.798	.000***
TDABC	0.563	0.053	10.714	0.000***				

The finding results shown in Table (2), reveals a significant impact between TDABC and IPV by CR in the industrial firms in the Kurdistan region. In addition,

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the results of the simple linear regression model indicate the effect of the independent variable, TDABD on the dependent variable, IPV, by reducing costs. as follow:

The result of the F-test indicates that the regression model is statistically significant. Since the (p-value) was (0.000) which is less than 0.05, it may be concluded, the simple regression model statistically significantly predicts the outcome variable. Furthermore, there is a significant effect of the independent variable (TDABC) on the dependent variable (IPV by CR in the industrial firms in the Kurdistan region).

The results of the analysis at the macro level indicate the following:

The result of consistency (B0), as shown in the regression model, is positive and significant with a coefficient (1.749). Indicates that there is an IPV by CR in the industrial firms by an amount of (1.749), even if the TDABC is equal to zero. Accordingly, this result can be explained by the fact that IPV by CR in industrial firms in the Kurdistan region derives its characteristics and high levels from the application of (TDABC) in the industrial firms under study.

However, the value of the marginal slope coefficient (B1) is (0.563) and significant at level (0.05), which indicates that a change of one (1) in the TDABC technique leads to a change in IPV by CR in industrial firms in the Kurdistan region by (0.563), which is a significant change that can be relied upon to explain the effect of the independent variable (TDABC) on the dependent variable IPV by CR in industrial firms in the Kurdistan region. This explains that during the production period of products, a new cost management technique like TDABC leads to product cost reduction because it provides more accurate information on the real production cost of the product. Also, (TDABC) lead to reduce the cost of operations by showing and eliminating production stages that do not add value to products, justify budget requests, and correctly apply chargebacks to the business (or customer). By focusing on time and activity, TDABC accounts for the actual resources consumed in the production process, which include direct labor, machine time, and overhead costs. In addition, TDABC allows manufacturers to identify and eliminate non-value-added activities, which are activities that do not contribute to the final product but

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consume resources. This enables companies to streamline their operations, reduce waste, and increase efficiency. As a result, the overall product cost is reduced, leading to increased profitability. TDABC also assists manufacturing firms in better understanding the impact of changes in product design, production processes, and supplier relationships on the final cost of a product. This information can be used to make informed decisions about product design, production processes, and supplier relationships to optimize the production cost of a product.

On the other hand, the value resulting from R2 is (0.35). which indicates that about (35%) of the change that occurs in IPV by CR is due to the (TDABC) technique, that is, the explanatory value of the independent variable (TDABC) in what happens to the responding variable amounted to (35%), and this result also indicates that the remaining effective percentage of (65%) is due to other variables.

Therefore, all the data from table (2) indicated the acceptance of the hypothesis (H2), which stated that TDABC has a significant impact on IPV by CR.

H3: Is there statistically significant relationship between applying the time driven activity-based costing (TDABC) and Improve Value of Product by customer satisfaction in industrial company in Kurdistan region?

The results in the table (1), indicate that the correlation coefficient between (TDABC and IPV by CS in industrial firms in the Kurdistan region) is equal to (0.546) at a significant level (0.05) as it reaches (0.000). It is indicated that its value is less than (0.05), which means that it is a statistically function and that there is a relatively strong correlation between the (TDABC and IPV by CS in industrial firms in the Kurdistan region), and this confirms the acceptance of the hypothesis(H3).

H4: Is there a statistically significant impact of applying the time driven activity-based costing (TDABC) has an impact on Improve Value of Product by customer satisfaction in industrial firms in the Kurdistan region?

Table (3) regression model results between TDABC and IPV by dimension CS.

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Model	Coefficients				Model Summary		ANOVA Table	
	Unstandardized Coefficients		T Test	Sig	R^2	Adj.(R^2)	F Test	Sig.
	B	Std.Error						
Constant	1.896	0.223	8.486	0.000***	0.299	0.295	88.556	.000***
TDABC	0.526	0.056	9.410	0.000***				

The finding results shown in Table (3), TDABC and IPV by CS in the industrial firms in the Kurdistan region demonstrate a significant relationship. The results of the simple linear regression model also show the way the independent variable TDABD affects the dependent variable IPV by CS. as follows:

The F-test results show the regression model's statistical significance coefficient. Here, the (p-value) was (0.000) which is less than 0.05, the result shows statistically significant relationship predicts the outcome variable. Furthermore, there is a significant effect of the independent variable (TDABC) on the dependent variable (IPV by CS in the industrial firms in the Kurdistan region).

The results of the analysis at the micro level indicate as follows:

The result of (B0), as shown in the regression model, is positive and significant with a coefficient (1.896). Indicates that there is an IPV by CS in the industrial firms by an amount of (1.896), even if the TDABC is equal to zero. Accordingly, this result can be explained by the fact that IPV by CS in industrial firms in the Kurdistan region derives its characteristics and high levels from the application of (TDABC) in the industrial firms under study.

On the one hand, the value of the marginal slope coefficient (B1) is (0.526) and significant at level (0.05), which indicates that a change of one (1) in the TDABC technique leads to a change in IPV by CS in industrial firms in the Kurdistan region by (0.526), which is a significant change that can be relied upon to explain the effect of the independent variable (TDABC) on the dependent variable IPV by CS in industrial firms in the Kurdistan region. This explains that during the production period of products, a new cost management technique like TDABC leads to attracting customer for buy products. Time-Driven Activity-

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Based Costing (TDABC) can contribute to improving product customer satisfaction in several ways. First, TDABC provides more accurate information on the real overhead traced cost of a product, which can assist decision makers in determining the price of the product more precisely, which can enhance product value and satisfy the greatest customer requirements by ensuring that products are priced competitively and in line with customer expectations .Second, by accurately identifying the resources required to produce a product and eliminating non-value-added activities, as well as by increasing product quality while reducing product cost, these impacts of TDABC on products lead to promoting product value, which leads to more attract customers for products and satisfied customer requirements. TDABC can also enable companies to identify and prioritize activities that are most important to customers, allowing them to focus their resources on these activities to ensure that customer needs are met. It is important for firms to differentiate themselves from their competitors and build a loyal customer base.

On the other hand, the value resulting from R2 is (0.29). which indicates that about (35%) of the change that occurs in IPV by CS is due to the (TDABC) technique, that is, the explanatory value of the independent variable (TDABC) in what happens to the responding variable amounted to (29%), and this result also indicates that the remaining effective percentage of (71%) is due to other variables.

Therefore, all the data from table (3) indicate the acceptance of the main hypothesis (H4), which stated that TDABC has a significant impact on IPV by CS.

H5: Is there a statistically significant relationship between applying the time driven activity-based costing (TDABC) and Improve Value of Product by productivity in the industrial company in Kurdistan region?

The results from Table (1) indicate that there is a statistically positive and significant correlation between the (TDABC and IPV by PRO in industrial firms in the Kurdistan region), which is equal to (0.485), and that the significance value is equal to (0.000) and is less than (0.05). A positive and significant correlation

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between the (TDABC and IPV by PRO in an industrial firm in the Kurdistan region), in other words, means accepting the hypothesis (H5). This result confirms that there is a correlation between the two variables, from which it can be concluded that encouraging industrial economic units by applying this technique leads to improving the productivity on the market by promoting manufacturing efficiency.

H6: Is there a statistically significant impact of applying the time driven activity-based costing (TDABC) has an impact on Improve Value of Product by productivity in the industrial firms in the Kurdistan region?

Table (4) regression model results between TDABC and IPV by dimension PRO.

Model	Coefficients				Model Summary		ANOVA Table	
	Unstandardized Coefficients		T Test	Sig	R^2	Adj.(R^2)	F Test	Sig.
	B	Std.Error						
Constant	1.332	0.213	10.946	0.000***	0.235	0.232	64.047	.000***
TDABC	0.427	0.053	8.003	0.000***				

The results shown in Table (4), mark a significant effect between TDABC and IPV by PRO in the industrial firms in the Kurdistan region. In addition, the results of the simple linear regression model indicate the effect of the independent variable, TDABD on the dependent variable, IPV, by PRO. as follow:

The f-test result demonstrated that the regression model was positive and statistically significant because the p-value was (0.000) which is less than 0.05. It indicates the significance of the impact of TDABC on IPV by dimension PRO in the industrial firms in the Kurdistan region.

The results of the analysis at the macro level indicate as follows:

The result of consistency (B0), as shown in the regression model, is positive and significant with a coefficient (2. 332) as it indicates that there is an IPV by PRO in the industrial firms by an amount of (2.332), even if the TDABC is equal to zero.

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Accordingly, this result can be explained by the fact that IPV by PRO in industrial firms in the Kurdistan region derives its characteristics and high levels from the application of (TDABC) in the industrial firms under study.

The value results of coefficient (B1) in the model indicate a positive and significant impact at level (0.05). Which shows that about 0.427 TDABC has an influence on PRO. which is a significant change that can be relied upon to explain the effect of the independent variable (TDABC) on the dependent variable (IPV) by dimension (PRO) in industrial firms in the Kurdistan region. This explains that during the production period of products, applying a new cost management technique like TDABC leads to improved product productivity. The contribution of time-driven activity-based costing (TDABC) to improving product productivity is significant. TDABC assists industrial firms to accurately measure the time required for each activity in the production process, helping them to optimize material resource allocation and improve productivity. By identifying and eliminating non-value-added activities in the production process, it also streamlines production and reduces waste.

In addition, TDABC provides more accurate information concerning the real cost of producing a product, which can inform decisions about product design, production processes, and supplier relationships. By making informed decisions, it led to improve efficiency and productivity in the production process by optimizing resources and reducing costs. identify and prioritize critical activities in the production process, allowing them to allocate resources effectively to optimize productivity. Indeed, TDABC helps industrial firms increase productivity due to reduce costs, and increase profitability, making it an essential tool for improving product productivity.

On the other hand, the value resulting from R2 is (0.23). which indicates that about (23%) of the change that occurs in IPV by PRO is due to the (TDABC) technique, that is, the explanatory value of the independent variable in what happens to the responding variable amounted to (23%), and this result also indicates that the remaining effective percentage of (77%) is due to other variables.

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Therefore, all the data from table (4) indicated the acceptance of the main hypothesis (H6), which stated that TDABC has a significant impact on IPV by PRO.

H7: Is there a statistically significant relationship between applying the time driven activity-based costing (TDABC) and Improve Value of Product-by-product quality in the industrial company in Kurdistan Region?

The above result indicates a significant correlation at level a ≤ 0.05 for the variability's between TDABC and IPV by QU in industrial firms in the Kurdistan Region.

The results of the analysis of the correlation coefficient between the two variables of the study (TDABC and IPV by QU) according to the overall indicator shown in Table (1) shows the existence of a strong and positive significant relationship between the two variables at the macro level and at high levels, as indicated by the value of the correlation coefficient between the variables "TDABC and IPV by QU. To (0.515) and at a significant level (0.05), and the probability value reached (0.000), as this result confirms that there is a correlation between the two independent and dependent variables, which It can be concluded that the TDABC techniques in industrial economic units lead to improving the value of products in the market through quality improvement. (TDABC) techniques for improving the value of products in the market through quality improvement.

H8 Is there statistically significant impact applying the time driven activity-based costing (TDABC) has an impact on Improve Value of Product by quality (QU) of product in the industrial firms in the Kurdistan Region?

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Table (5) regression model results between TDABC and IPV by dimension QU. (Authors primary data).

Model	Coefficients				Model Summary		ANOVA Table	
	Unstandardized Coefficients		T Test	Sig	R^2	Adj.(R^2)	F Test	Sig.
	B	Std.Error						
Constant	1.935	0.241	8.030	0.000***	0.265	0.262	75.132	.000***
TDABC	.523	0.060	8.668	0.000***				

The above results from Table (5), illustrate a significant impact between TDABC and IPV by QU in the industrial firms in Kurdistan Region. In addition, the results of the simple linear regression model indicate the effect of the independent variable, TDABD on the dependent variable, IPV, by QU. as follow:

The result of the F-test shows that this simple regression model is statistically significant because the (p-value) was (0.000) which is less than 0.05, and indicates that, the regression model positive and statistically significantly predicts the outcome variable. Furthermore, there is a significant effect of the independent variable (TDABC) on the dependent variable (IPV by QU in the industrial firms in the Kurdistan region).

Based on the F-test result for the regression model, there is a significant effect of the independent variable TDABC on the dependent variable IPV by QU. Which indicates that the dependence of the researched industrial firms on the application of TDABC affects IPV by QU in the industrial firms in the Kurdistan region. The results of the analysis at the macro level indicate as follows:

The result of consistency (B0), as shown in the regression model, is positive and significant with a coefficient (1.935). Indicates that there is an IPV by QU in the industrial firms by an amount of (1.935), even if the TDABC is equal to zero. Accordingly, this result can be explained by the fact that IPV by QU in industrial firms in the Kurdistan region derives its characteristics and high levels from the application of (TDABC) in the industrial firms under study.

However, the value of the marginal slope coefficient (B1) is (0.523) and significant at level (0.05), which indicates that a change of one (1) in the

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TDABC technique leads to a change in IPV by QU in industrial firms in the Kurdistan region by (0.523), which is a significant change that can be relied upon to explain the effect of the independent variable (TDABC) on the dependent variable IPV by QU in industrial firms in the Kurdistan region**.** This explains that during the production period of products, applying a new cost management technique like TDABC leads to improved product quality. Adopting time-driven activity-based costing (TDABC) leads to increased product quality by identifying and measuring more accurate costs and the time required for each activity in the production process, production processes, and supplier relationships, enabling companies to focus resources on critical activities that affect product quality. Furthermore, TDABC assists industrial firms in optimizing their use of resources, including labor and equipment, improving consistency and reliability. Also, by identifying and addressing quality issues in the production process, TDABC assists industrial firms in improving overall product quality, leading to increased customer satisfaction and loyalty.

On the other hand, the value resulting from R2 is (0.26). which indicates that about (26%) of the change that occurs in IPV by QU is due to the (TDABC) technique, that is, the explanatory value of the independent variable in what happens to the responding variable amounted to (26%), and this result also indicates that the remaining effective percentage of (76%) is due to other variables.

Therefore, all the data from table (5) indicated the acceptance of the hypothesis (H8), which stated that TDABC has a significant impact on IPV by QU.

H9: Is there a statistically significant relationship between applying the time driven activity-based costing (TDABC) and Improve Value of Product by competitive price at industrial company in Kurdistan Region?

The results from Table (1) demonstrate that there is a statistically positive and significant correlation between the (TDABC and IPV by CP in industrial firms in the Kurdistan region), which is equal to (0.527), and that the significance value is equal to (0.000) and it is less than (0.05). A positive and significant correlation

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between the (TDABC and IPV by CP in an industrial firm in the Kurdistan region), in other words, means accepting the alternative hypothesis (H9). This result confirms that there is a correlation between the two variables, from which it can be concluded that encouraging industrial economic units by applying this technique leads to improving the quality of products on the market by reducing costs. The (TDABC) technique aims to improve the value of products on the market by competitive price.

H10: Is there a statistically significant impact of applying the time driven activity-based costing (TDABC) has an impact on Improve Value of Product by competitive price at industrial company in Kurdistan Region?

Table (6) regression model results between TDABC and IPV by dimension CP. (Authors primary data).

Model	Coefficients				Model Summary		ANOVA Table	
	Unstandardized Coefficients		T Test	Sig	R^2	Adj.(R^2)	F Test	Sig.
	B	Std.Error						
Constant	1.926	0.228	8.431	0.000***	0.277	0.274	79.888	.000***
TDABC	0.511	0.057	8.938	0.000***				

The results shown in Table (6), indicate a significant effect between TDABC and IPV by CP in the industrial firms in the Kurdistan region. In addition, the results of the simple linear regression model indicate the effect of the independent variable, TDABD on the dependent variable, IPV, by CP. as follow:
The results of the F-test indicate that the model is statistically significant because the (p-value) was (0.000) which is less than 0.05, and indicates that, the regression model statistically significantly predicts the outcome variable. Furthermore, there is a significant effect of the independent variable (TDABC) on the dependent variable (IPV by CP in the industrial firms in the Kurdistan region).

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Based on the F-test result for the regression model, there is a significant effect of the independent variable TDABC on the dependent variable IPV by CP. Which indicates that the dependence of the researched industrial firms on the application of TDABC affects IPV by CP in the industrial firms in the Kurdistan region. The results of the analysis at the macro level indicate as follows:

The result of consistency (B0), as shown in the regression model, is positive and significant with a coefficient (1.926). Indicates that there is an IPV by CP in the industrial firms by an amount of (1.926), even if the TDABC is equal to zero. Accordingly, this result can be explained by the fact that IPV by CP in industrial firms in the Kurdistan region derives its characteristics and high levels from the application of (TDABC) in the industrial firms under study.

But the value of the marginal slope coefficient (B1) is (0.511) and significant at level (0.05), which indicates that a change of one (1) in the TDABC technique leads to a change in IPV by CP in industrial firms in the Kurdistan region by (0.511), which is a significant change that can be relied upon to explain the effect of the independent variable (TDABC) on the dependent variable IPV by CP in industrial firms in the Kurdistan region. This explains that during the production period of products, applying a new cost management technique like TDABC leads to the promotion of a competitive price for products. Implementing TDABC helps industrial firms understand the real cost of their products by accurately measuring the cost injured, measuring the time required for each activity, and eliminating non-value-added activities. This leads to decreased production costs, reduced waste, and increased efficiency, which helps industrial firms make informed decisions about pricing that, can make their products more competitive in the market. Further, implementing TDABC in industrial firms can assist firms in optimizing their use of resources, including labor and equipment, improving production efficiency, and reducing costs, which can help industrial firms, offer products at a more competitive price at a reasonable time while maintaining profitability by identifying critical activities in the production process. On the other hand, the value resulting from R2 is (0.27). which indicates that about (27%) of the change that occurs in IPV by CP is due to the (TDABC) technique, that is, the explanatory value of the independent variable in what

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happens to the responding variable amounted to (27%), and this result also indicates that the remaining effective percentage of (73%) is due to other variables.

Therefore, all the data from table (6) indicated the acceptance of the main hypothesis (H10), which stated that TDABC has a significant impact on IPV by CP.

Conclusion

1- Implementing TDABC in industrial firms leads to providing more precise information on products and production processes that leads to distributed costs on the basis of each activity and cost drivers, (TDABC) that assist managers in the process of decision-making due to counting the costs of products and providing more accurate cost information and measuring the cost of each product. Also, this technique distributes manufacturing overhead costs for each on the basis of time spent to conduct each activity.

2- The study results illustrate a significant correlation coefficient between the independent variable of TDABC and the dependent variable of IPV in the dimensions of (CR, CS, PRO, QU, and CP). which is statistically equal to (0.596, O.546, 0.485, 0.515, 0.527), respectively, and that the significance value is equal to (0.000) and is less than (0.05). A positive and significant correlation between the TDABC and IPV by dimensions (CR, CS, PRO, QU and CP) in an industrial firm in the Kurdistan region.

3- The simple regression model of the research study indicated a positive and significant impact of independent variables on dependent variable dimensions. It is found that the impact of TDABC on dimensions of IPV is positive and significant. That is, statistically, the impact of TDABC on the dimensions of IPV (CR, CS, PRO, PQ, and CP) equals (0.563, 0.526, 0.427, 0.523, and.0.511), respectively, and is significant at the level of (0.05). when the R2 of the models also indicates that they can explain about (35%, %29, %23, %26, %27) of the change in the IPV by CR, CS, PRO, PQ, and CP by the impact of the independent variable TDABC.

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Recommendation

Based on the achieved results, the current study makes a set of recommendations that may be of interest, as follows:

1- This study recommends that future researchers test time-driven activity-based costing in the public sector to investigate the impacts of this technique on reducing costs and improving quality of service when providing services.

2- This research study recommended using secondary data from industrial firms and a new software program to better find the impact of TDABC on the dimensions of IPV IN industrial firms in the Kurdistan region.

3- This research study recommends that industrial firms embrace contemporary accounting methods, the most important of which is time-driven activity-based costing (TD-ABC), which is easy to implement, and indicates accurate information that assists decision-makers in controlling. In addition, the need to educate companies about the TDABC approach to solve the problem of allocating manufacturing overheads better and more equitably, as well as to overcome the disadvantages of the traditional method based on time equations,

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کاریگەری تێچوی چالاکییەکان بەپێی بنەمای کات لەسەر باشترکردنی بەهای بەرهەم

پوختە:

ئەو توێژینەوەیە دەکۆڵێتەوە لە کاریگەری تێچوی چالاکییەکان بەپێی بنەمای کات لەسەر بەرەوپێش بردنی بەهای بەرهەم لە دامەزراوە پیشەسازیەکان لە هەرێمی کوردستانی عیراق . کێشەی سەرەکی ئەم توێژینەوەیە بریتییە لە شیاوی جێبەجێکردنی تیچوی چالاکییەکان لەسەر بنەمای کات لە دامەزراوە پیشەسازیەکان لە هەرێمی کوردستانی عێراق بۆ بەشداری کردن لە کەمکردنەوەی تێچون، بەرزکردنەوەی کوالیتی بەرهەم، زیادکردنی ڕەزامەندی کریارەکان،زیادکرنی بەرهەمهێنان، باشترکردنی نرخە کێبرکێکارییەکان. بەهۆی بێتوانایی سیستەمی تێچووی تەقلیدی لە کێبڕکێ و باشترکردنی تێچووی سەرەکی بە شێوەیەکی دروست، هەرەها بێتوانایی لە خۆگونجاندن لەگەڵ گۆڕانکارییەکانی ژینگەی بازرگانیدا، ئەم توێژینەوەیە هەوڵدەدات چەمک و گرنگی و ئامانجەکانی تێچوی چالاکییەکان لەسەر بنەمای کات دەستنیشان بکات، تیشک بخاتە سەریان لە کەمکردنەوەی تێچوون، زیادکردنی کوالیتی بەرهەم، باشترکردنی ڕازیبوونی کڕیار، زیادکردنی بەرهەمهێنان، و باشترکردنی نرخی بەراوردکاری بەرهەم هەروەها پێوانەکردنی پەیوەندی نێوان تێچوی چالاکییەکان لەسەر بنەمای کات و ڕەهەندەکانی باشترکردنی بەهای بەرهەم. ئەنجامەکانی شیکاری توێژینەوەکە دەردەخەن کە وا پەیوەندییەکی کاریگەرو گرنگ و ئەرێنی هەیە لە نێوان تێچوی چالاکییەکان لەسەر بنەمای کات و باشتربوونی بەهای بەرهەم. لە ئەنجامدا، دەردەخات کە پەیوەندی نێوان تێچوی چالاکییەکان لەسەر بنەمای کات و ڕەهەندەکانی باشترکردنی بەهای بەرهەم وەک (کەمکردنەوەی تێچوون، ڕازیبوونی کڕیار، بەرهەمهێنان، کوالیتی بەرهەم، و نرخی کێبڕکێ) ئەرێنی و گرنگە. سەرەڕای ئەوەش، ئەنجامەکانی کاریگەری لە نێوان تێچوی چالاکییەکان لەسەر بنەمای کات و باشترکردنی بەهای بەرهەم بەپێی ڕەهەندەکانی وەک (کەمکردنەوەی تێچوون، ڕازیبوونی کڕیار، بەرهەمهێنان، کوالیتی بەرهەم، و نرخی کێبڕکێ) بە هەمان شێوە ئەرێنی و گرنگە. لە کۆتاییدا، توێژینەوەکە پێشنیاری ئەوە دەکات کە توێژەرانی داهاتوو تێچووی چالاکیی لەسەر بنەمای کات لە کەرتی

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گشتیدا تاقی بکەنەوە بۆ لێکۆڵینەوە لە کاریگەرییەکانی ئەم تەکنیکە لەسەر کەمکردنەوەی تێچوون و باشترکردنی کوالیتی خزمەتگوزاری لە کاتی پێشکەشکردنی خزمەتگوزارییەکان.

تاثير التكالفة على اساس النشط الموجه بالوقت (TDABC) على تحسين قيمة المنتوج

الملخص:
يتناول هذا البحث آثار تقنيات التكلفة المستندة إلى النشاط المدفوعة بالوقت (TDABC) على تحسين قيمة المنتجات في الشركات الصناعية في إقليم كوردستان العراق. تكمن المشكلة الرئيسية للدراسة في إمكانية تطبيق (TDABC) في الشركات الصناعية في إقليم كوردستان العراق ومساهمتها في خفض التكلفة ، وزيادة جودة المنتج ، وتحسين رضا العملاء ، وزيادة الإنتاجية ، وتحسين الأسعار التنافسية.
Translation is too long to be saved
وذلك بسبب عدم قدرة أنظمة التكلفة التقليدية على المنافسة وتحسين التكاليف العامة بشكل صحيح ، كما أنها لم تكن قادرة على مواكبة التغييرات في بيئة الأعمال. كما تحاول هذه الدراسة تحديد مفهوم وأهمية وأهداف تقنيات التكلفة المستندة إلى النشاط المدفوعة بالوقت، وتسليط الضوء عليها في خفض التكلفة ، وزيادة جودة المنتج ، وتحسين رضا العملاء ، وزيادة الإنتاجية، وتحسين السعر المقارن للمنتج وكذلك قياس الارتباط بين تقنيات التكلفة المستندة إلى النشاط المدفوعة بالوقت وأبعاد تحسين قيمة المنتج.
Translation is too long to be saved
أشارت نتائج تحليل الدراسة إلى وجود علاقة ارتباط موجبة ومعنوية وانحدار بين تقنيات التكلفة المستندة إلى النشاط المدفوعة بالوقت وتحسين قيمة المنتج. ونتيجة ذلك، يتضح أن العلاقة بين تقنيات التكلفة المستندة إلى النشاط المدفوعة بالوقت وأبعاد تحسين قيمة المنتج مثل (خفض التكلفة ، ورضا العملاء ، والإنتاجية ، وجودة المنتج ، والسعر التنافسي) إيجابية وهامة. بالإضافة إلى ذلك ، فإن نتائج الانحدار بين TDABC وتحسين قيمة المنتج من خلال أبعاد مثل (خفض التكلفة ، ورضا العملاء ، والإنتاجية ، وجودة المنتج ، والسعر التنافسي) هي بالمثل إيجابية وهامة.
أخيراً ، توصي الدراسة بأن يختبر الباحثون المستقبليون التكلفة المستندة إلى النشاط على أساس الوقت في القطاع العام للتحقيق في آثار هذه التقنية على خفض التكاليف وتحسين جودة الخدمة عند تقديم الخدمات.