


APPLICATION OF USING THE ACTIVITY-BASED COSTING SYSTEM ON PRODUCT DEVELOPMENT IN JORDAN'S MANUFACTURING LISTED MANUFACTURING FIRMS

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 17 March 2023</p> <p>Accepted 13 June 2023</p>	<p>Purpose: The aim of this research was to examine how the Activity-Based Costing system (ABC) affected product development in Jordanian manufacturing public shareholding companies.</p>
<p>Keywords:</p> <p>Activity-Based Costing System; Product Development; Industrial Public Shareholding Companies in Jordan.</p> <div data-bbox="172 952 480 1198" style="text-align: center;">  </div>	<p>Design/methodology/approach: According to the monthly statistical bulletin of the Amman Stock Exchange and the Securities Depository Center, the study population for the year 2022 included (56) Jordanian industrial firms. The questionnaire was distributed to the financial manager, production manager, sales manager, and accountant. In comparison to the total number of circulated questionnaires, (132) were authorized for statistical analysis. Regression analysis and correlation were used to analyze the data and extract results related to the statistical methods used in the study, namely, descriptive statistics, Cronbach's alpha equation, Pearson's correlation coefficient, and linear regression analysis.</p> <p>Findings: The study revealed that there is a connection between the ABC system and product development in Jordanian industrial companies, where this approach contributes to the improvement and development of products by tracking the stages of production since its inception and concentrating on activities that add value to the company and eliminating activities that do not add any value, naturally improving the competitive position of the company.</p> <p>Research Practical implications: Hence, one of this study's main findings suggests developing strategies for methodically and practically gathering comprehensive data on the company's operations. The study advised that Jordan's industrial public shareholding companies stay up with recent advancements in the field of activity-based costing.</p> <p>Originality/value: This study recommends that for the company to stay up with the acceleration in advancement in the areas of activity costs and the employment of latent capabilities for the company's advantage, the study also recommended that the company train its employees to develop their capabilities to serve its strategies. As the findings also reveal that most of the manufacturing firms in Jordan have the infrastructure to adopt and implement the ABC system.</p> <p>Doi: https://doi.org/10.26668/businessreview/2023.v8i6.2458</p>

APLICAÇÃO DO USO DO SISTEMA DE CUSTEIO BASEADO EM ATIVIDADES NO DESENVOLVIMENTO DE PRODUTOS EM EMPRESAS DE MANUFATURA LISTADAS NA JORDÂNIA

RESUMO

Objetivo: O objetivo desta pesquisa foi examinar como o sistema de custeio baseado em atividades (ABC) afetou o desenvolvimento de produtos em empresas jordanianas de manufatura de capital aberto.

Projeto/metodologia/abordagem: De acordo com o boletim estatístico mensal da Bolsa de Valores de Amã e do Securities Depository Center, a população do estudo para o ano de 2022 incluiu (56) empresas industriais jordanianas. O questionário foi distribuído para o gerente financeiro, o gerente de produção, o gerente de vendas

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e o contador. Em comparação com o número total de questionários distribuídos, (132) foram autorizados para análise estatística. A análise de regressão e a correlação foram usadas para analisar os dados e extrair resultados relacionados aos métodos estatísticos usados no estudo, a saber, estatísticas descritivas, equação alfa de Cronbach, coeficiente de correlação de Pearson e análise de regressão linear.

Conclusões: O estudo revelou que há uma conexão entre o sistema ABC e o desenvolvimento de produtos nas empresas industriais jordanianas, em que essa abordagem contribui para o aprimoramento e o desenvolvimento de produtos, acompanhando os estágios da produção desde seu início e concentrando-se nas atividades que agregam valor à empresa e eliminando as atividades que não agregam nenhum valor, melhorando naturalmente a posição competitiva da empresa.

Implicações práticas da pesquisa: Portanto, uma das principais conclusões deste estudo sugere o desenvolvimento de estratégias para a coleta metódica e prática de dados abrangentes sobre as operações da empresa. O estudo aconselhou que as empresas industriais de capital aberto da Jordânia se mantenham atualizadas com os recentes avanços no campo do custeio baseado em atividades.

Originalidade/valor: Este estudo recomenda que, para que a empresa acompanhe a aceleração dos avanços nas áreas de custos de atividades e o emprego de capacidades latentes para a vantagem da empresa, o estudo também recomenda que a empresa treine seus funcionários para que desenvolvam suas capacidades para atender às suas estratégias. Os resultados também revelam que a maioria das empresas de manufatura da Jordânia tem a infraestrutura necessária para adotar e implementar o sistema ABC.

Palavras-chave: Sistema de Custeio Baseado em Atividades, Desenvolvimento de Produtos, Empresas Industriais de Capital Aberto na Jordânia.

APLICACIÓN DEL USO DEL SISTEMA DE COSTES BASADO EN ACTIVIDADES EN EL DESARROLLO DE PRODUCTOS EN EMPRESAS MANUFACTURERAS COTIZADAS EN JORDANIA

RESUMEN

Objetivo: El objetivo de esta investigación era examinar cómo afectaba el sistema de costes basados en actividades (ABC) al desarrollo de productos en las empresas manufactureras jordanas que cotizan en bolsa.

Diseño/metodología/enfoque: Según el boletín estadístico mensual de la Bolsa de Ammán y el Centro de Depósito de Valores, la población de estudio para el año 2022 incluía (56) empresas manufactureras jordanas. El cuestionario se distribuyó al director financiero, al director de producción, al director de ventas y al contable. Del total de cuestionarios distribuidos, (132) fueron autorizados para el análisis estadístico. Se utilizaron análisis de regresión y correlación para analizar los datos y extraer resultados relacionados con los métodos estadísticos utilizados en el estudio, a saber, estadística descriptiva, ecuación alfa de Cronbach, coeficiente de correlación de Pearson y análisis de regresión lineal.

Conclusiones: El estudio reveló que existe una conexión entre el sistema ABC y el desarrollo de productos en las empresas industriales jordanas, en las que este enfoque contribuye a la mejora y el desarrollo de productos siguiendo las etapas de producción desde su inicio y centrándose en las actividades que añaden valor a la empresa y eliminando las actividades que no añaden ningún valor, mejorando naturalmente la posición competitiva de la empresa.

Implicaciones prácticas de la investigación: Por lo tanto, una de las principales conclusiones de este estudio sugiere el desarrollo de estrategias para la recopilación metódica y práctica de datos exhaustivos sobre las operaciones de la empresa. El estudio aconseja que las empresas industriales jordanas que cotizan en bolsa se mantengan al día de los últimos avances en el campo del cálculo de costes basado en actividades.

Originalidad/valor: Este estudio recomienda que, para que la empresa se mantenga al día de los avances acelerados en las áreas del cálculo de costes por actividades y el empleo de capacidades latentes para ventaja de la empresa, el estudio también recomienda que la empresa forme a sus empleados para que desarrollen sus capacidades para cumplir sus estrategias. Los resultados también revelan que la mayoría de las empresas manufactureras de Jordania disponen de la infraestructura necesaria para adoptar e implantar el sistema ABC.

Palabras clave: Sistema de Costes por Actividades, Desarrollo de Productos, Empresas Industriales Jordanas que Cotizan en Bolsa.

INTRODUCTION

There is a great rivalry in the business world in the current era of globalization. Due to the quick advancement of technology, a wide range of products and services are now being supplied, which has increased competition (Pietrzak et al., 2020). There is a lot of discussion on ABC in publications for academics and professionals (Vetchagool et al., 2020; Charaf et al., 2022). Although there is actual data to support ABC's significant contribution to enhancing corporate performance, productivity, and profitability, worldwide ABC adoption has not surpassed 30 % on average (Jankala and Silvola, 2012; Askarany and Yazdifar, 2012; Masadeh et al., 2021; Alibeiki and Gümüs, 2020). Researchers found that the adoption of ABC is more common in developed nations than in less developed nations and that the significance of cost information is a predictor and a positive factor of ABC adoption (Schoute, 2011; Elhamma, 2012; (Tsai et al., 2019). Currently, cost controllers utilize ABC for conventional purposes like cost and financial performance analysis, but it has not been "transferred" to commercial managers for purposes like price estimation or profitability analysis of the products and consumers (Jankala and Silvola, 2012; Almeida and Cunha, 2017; Almasria, 2018).

The primary driving force behind ABC adoption has been the desire for increased efficiency in the face of intense competition. Additionally, a lot of firms utilize ABC data to monitor continual performance improvement, make strategic decisions, and increase company profits (Tsai et al., 2019). There are still differing opinions on ABC's contribution to enhancing business performance, despite its widespread and quick global diffusion (Elhamma, 2013; Almasria et al., 2021).

Focusing on ABC has become essential for success in various business sectors due to the growth of the competitive environment and the emergence of a modern manufacturing environment (Rundora et al., 2013). This is because it helps companies develop products, achieve long-term profitability, and maintain a strong and competitive strategic position within the industry (Almeida and Cunha, 2017). The financial crisis made it more important for businesses to identify activities that do not add value to the organization and find a way to eliminate them in every step of the product's manufacturing process (Salawu, and Ayoola, 2012). This increased the importance of concentrating on the field of strategic cost management (Elhamma, 2013; Alawaqleh et al., 2021).

Due to its significance in the process of strengthening the company's competitive position, this study aims to show the impact of adopting the activity-based costing system on

product development in the industrial public shareholding businesses in Jordan (Masadeh et al., 2021).

Intense competition in the global market, accelerating technological advancements in the industrial environment, and ongoing changes in consumer preferences are challenges faced by industrial companies throughout the world as they search for high-quality products to compete in the market. The management of businesses had to adopt a modern approach in order to study the market and competitors' behavior, improve the quality of the product, produce high-quality, developed, and low-cost products, and sell them at prices that satisfy customers' desires and their needs. At the same time, it considers the amount of the profitability factor, which is strongly correlated to the cost of the product, which helps these companies to survive in the competitive market and carry out their activities (Schoute, 2011; Brewer et al., 2017; Almasria, 2022).

The problem of the study can be summarized in the following main question:

What is the effect of applying the activity-based costing system on product development in public shareholding industrial companies in Jordan?

Since maintaining the company's position was crucial, this study aims to demonstrate the effects of implementing the activity-based costing system on product development in public shareholding companies. The study of activity-based costing and its impact on product development is regarded as one of the most significant factors that affect the company's competitive position, its ability to control the market, and its ability to achieve profits at the lowest possible costs and the best quality (Vetchagool et al., 2020).

The importance of this study lies in the fact that it examines the activity-based costing system, which is regarded as one of the most crucial modern management techniques (Almasria, 2021). This approach is crucial for reducing costs and improving and developing products, especially in light of the growing competition that economic units are currently experiencing to provide products with competitive prices and high quality in order to achieve the best results in investment to achieve economic rates (Charaf and Bescos, 2013; Tsai et al., 2012).

Because it studies the effects of using the activity-based costing strategy on product development in the industrial public shareholding businesses in Jordan, this study combines the fields of application of accounting and management, giving it scientific significance.

The practical significance is found in the fact that it offers data that enables the Jordanian industrial sector to apply an activity-based costing system that relies on activity and benefits from it in decision-making that achieves the company's financial balance and supports its

presence among competitors, which increases its capacity to face present and future challenges (Askarany and Yazdifar, 2012; Tsai et al., 2014).

ABC has been proposed as a necessary factor for an organization to improve costing, which has consequences for planning, controlling, and decision-making. ABC's main concept is to acquire competitiveness and more precise product costing (Askarany and Yazdifar, 2012; Charaf et al., 2022; Almasria et al., 2018).

In order to acquire competitive product costs and pricing, the majority of businesses have switched from their old costing method to a target system. Businesses with ABC typically exhibit signs of profitability and increased competitiveness. In a hypothetical scenario, ABC proposes to achieve all the mentioned goals. This analysis so demonstrates that ABC adoption was a response to the changing environment. Traditional costing approaches did not offer management with enough data in a market where there is intense competition (Kissa et al., 2019).

ABC data is frequently used to analyze ongoing performance improvement, increase company profitability, and make strategic decisions. There are still differing opinions on ABC's contribution to enhancing business performance, despite its widespread and quick global diffusion (Maiga, 2014).

Utilizing ABC for cost analysis and calculations has a direct impact on operational performance and can therefore indirectly increase production performance. By enhancing the quality and speed of manufacturing, ABC has a considerable indirect influence on production costs.

The ABC system has emerged because of the increasing product diversity and industrial complexity in developing enterprises (Pietrzak et al., 2020). Compared to the conventional approach, ABC is a critical enabler for ensuring correct product prices. However, according to the literature, the ABC approach addresses the drawbacks of conventional systems by attributing indirect costs to the products and services that are produced. Based on the resources that they use; the ABC system distributes costs to products or consumers (Gunasekaran et al., 2005).

ABC enables the formulation of solutions to issues or strategies for seizing opportunities, as well as the identification of challenges and opportunities. It accomplishes this by offering both financial and non-financial data about activities and expense items (Vetchagool et al., 2020).

Business operations are frequently spatially dispersed in innovative manufacturing and service environments. They depend more on suppliers and business network partners to offer the items and services needed to create final products and deliver services in a networked economy.

The majority of businesses using these new business models continue to employ the same conventional costing and management control methods that were created in the past for a vastly different environment ((Kissa et al., 2019; Kitsantas et al., 2020).

Different studies on perceived ABC implementation issues in businesses that had adopted the strategy were considering it, had never considered it, or had rejected it are lacking. Greater understanding of the accuracy of costs may help with pricing decisions and perhaps disclose which items are most productive as well as those that are losing money. The empirical study demonstrates that widespread usage of ABC enhances the production process (Kitsantas et al., 2020). The study advances a number of past ABC performance studies, producing additional major contributions to this field.

LITERATURE REVIEW AND THEORETICAL FOUNDATION

Activity-Based Costing

When ABC was first presented, the community expected that most businesses would replace their existing costing methods with it. The identification of the ABC dilemma was critical in changing the ABC study from presentation to empirical study of why ABC is not more actively applied (Bescos & Charaf, 2013; Vetchagool et al., 2019; Kitsantas et al., 2020).

Ultimately, Activity-Based Costing implementation aims to achieve advantages that either directly or indirectly affect performance (Brierley, 2015). Organizations that use ABC can increase efficiency by identifying, minimizing, or eliminating tasks that do not provide value for their customers and reevaluating their offerings. Consequently, ABC may reduce product costs, improve the quality of the information, and accelerate the production process (Askarany and Yazdifar, 2012; Kissa et al., 2019).

By essentially converting general indirect costs into direct production costs, the ABC method provides more accurate product costing. It allocates the expenses of various indirect costs to the various activities that use them after computing their costs. The ABC method provides management with valuable data that can be used to increase process effectiveness and boost product profit margins. This accounting system seems to be suitable for the pharmaceutical business, which is a highly competitive sector with many indirect expenditures,

a wide range of goods, and complex production procedures (Chen et al., 2019). However, because state-owned pharmaceutical companies were formerly supported by the Vietnamese government, these pharmaceutical firms did not need to adopt a cost accounting strategy like ABC to increase their cost effectiveness and competitiveness (Al-Omiri and Drury, 2007).

ABC is based on allocating costs that can't be directly allocated to the product to the activities that cause them, which then results in costs being allocated to the product for each activity in accordance with the expected benefit from that activity. It is described as a particular strategy for enhancing costing that places an emphasis on activities as primary cost goals before allocating costs to final goals. By taking into account the connection between cost components and their causes, this method analyzes the cost of activities, their performance, and the resources that support them. This method came into being as a result of the limitations of traditional accounting techniques in addressing problems brought on by the recent advancement of production techniques and modern accounting techniques (Maiga, 2014). As a result, it is regarded as one of the most significant entrances to strategic costs because it helps decision-makers by giving them more precise and useful information and by helping them achieve their goals (Faiza and Thair, 2022).

And (Hilton, 2011) described it as a system in which indirect costs are allocated in two stages: first, they are gathered in cost pools, and second, they are assigned to the final products as cost drivers.

The activity-based costing system is used in the company as a supplement to the traditional costing system and not as an alternative, according to (Garrison, 2012), who also believes that this approach is a method for calculating the cost in order to give managers information about the cost to make strategic decisions and decisions that can affect the production capacity of the company.

According to (Al-Sayed and others, 2019), it is a system based on categorizing work into activities and connecting the costs of each activity to the final product based on appropriate cost causes. This leads to accuracy in calculating the cost of the service or product through activity analysis, as well as providing the administration with financial and non-financial data that supports the planning, control, and performance improvement processes (Kissa et al., 2019).

According to the researcher, the activity-based costing system can be viewed as a starting point for calculating additional costs. This way, the project can be divided into different activities, and each activity's costs can be linked to the final product through cost causes, giving

management the cost data, they need to make informed decisions. Aside from giving management access to financial and non-financial data that aids in planning and enhances control and performance in Jordanian industrial companies, the researcher also thinks that the activity-based costing system gives management information useful for making strategic decisions.

Elements of the activity-based costing system:

According to (Abdalla, Ezzat.202), the following components are the most crucial ones upon which the activity-based costing system is built:

- **Resources:** It covers anything that may be categorized as a resource, including raw materials, infrastructure and technology, human resources, and services that are bought, such as accounting and legal services, and are all utilized by activities to produce outputs.
- **Activities:** They are divided into four main groups: activity related to the product unit, activity related to the production batch, activity related to the production line, and activity related to all company operations. Activities are considered the main center for the activity-based costing system components and the reason a product exists. This sequence helps reduce the defects found in the conventional approach.

Cost purposes, also known as outputs: Are the cost units that are used during the production of goods and services and connected to a variety of outputs via the sources of activity costs.

Cost drivers: As it works to measure spent costs and resources and links them with the ultimate activities of the cost, it is a measure that explains the cause for an element's presence inside the cost pool.

The cost drivers must be identified, differentiated between in the first and second stages of the costing cycle, and connected to activities and the product in order to be measured. Hence:

The first stage is concerned with providing resources to activities, such as deciding how many operating orders to issue and who will conduct the examination.

The second stage: is related to charging the cost of the activity on the outputs, in which the main factor in the formation of cost pools is the cause of the cost.

- **Cost pools:** It is a collection of the costs of all activities that are considered in the same field and must be taken into consideration:
- The cost should be directed by similar, homogeneous, and related activities.

- The cost should be commensurate with the activity, as the relationship between it and the variables is a direct relationship.

Development of New Products

The need for businesses to find ways to produce goods at low cost, high quality, and at the best price for the consumer while maintaining the company's profitability has grown due to the acceleration and changes in consumer tastes and the rapid advancements in information technology. The traditional accounting systems are no longer adequate to achieve the aforementioned. Cost management, its effect on product structuring, and its significance for gaining a competitive edge thus became apparent. Finding products that accommodate the value that customers demand and that satisfy their desires is one of the most significant issues facing companies. This has prompted companies to focus on product development as one of the most important strategies that enable companies to overcome these challenges and gain a competitive edge (Al-Omiri, and Drury, 2007).

The shape, size, complexity, material, and method of a product can all be altered. According to Cooper and Kaplan (1988), when product variety increases, traditional fixed cost accounting methods have additional limitations that might result in an incorrect and overly-simplistic allocation of production costs like direct labor costs. The ABC technique is designed to address these constraints by providing more precise cost allocation. When a corporation has a larger product line, it is more important to calculate the cost price of each product more precisely. As a result, they are in greater need of a cost-calculating accounting approach, which leads to the following hypothesis: H2, "Production enterprises with more product variety have a higher market value, and a stronger urge to apply the ABC strategy".

It is clear that the product does not last for very long because it goes through a life cycle that determines the time it spends on the market until issues arise that affect its sales and end with it reaching the stage of deterioration, so companies are looking for ways to develop products as one of the necessary methods (Charaf et al., 2022). The product plays an important role in directing the company's activities because it serves as the focal point to meet the needs of customers. When a company adopts a product development strategy, whether it's with the aim of increasing quality or cutting costs, it succeeds through its products or services and manufacturing processes, which in turn has an impact on competitiveness, establishing the value of product development (Al-Khasawneh, 2016; Alduais et al., 2022).

Based on the, it is possible to conclude that product development is a methodology intended to determine the level of market acceptability of products in order to secure the survival and expansion of the company while carrying out its operations.

As it relates to the following pillars, product development is regarded as one of the fundamental elements of any management plan used by the organization (Hiba, Lamya.2021).

- Technological advancements that have been accelerated and may put current items in danger.
- The product is maintained through ongoing development to preserve its long-term competitive edge.
- Continuous communication with customers, suppliers, and shareholders as development is one of the factors that contribute to the company's success in accomplishing its objectives.
- Finding chances that are both plentiful and high-quality, developing them, and utilizing them to create benefits and strengths to address some of the issues that present and potential customers have can help the business succeed.
- By creating a strong foundation for future growth, continuous development aids in the company's sustainable growth and enables it to handle change effectively in the future.

Product development Resources: Everyone who works for the company is accountable for the product development process, especially those who are directly involved in the design process. Rajkhan's study (2002) divided up these sources into the following categories:

Internal sources: The company's internal resources are found in all areas and include intellectual capital by encouraging all employees to contribute to the development of new products. The most significant internal source for development concept generation is the marketing department. This is a result of the work that this department does, which includes gathering up-to-date knowledge about the market and its requirements, as well as the potential to spot flaws in the company's own products, as well as figuring out the benefits and traits of rival products, allowing for the creation of concepts that aid in the development process.

External sources: Some businesses recruit experts and search for creative ideas outside the divisions of the business to build their products. These are some examples of these external sources:

- Investors: Since independent inventors are among the most effective sources for producing new products, the business must ensure that those with whom it collaborates

can safeguard their ownership rights to the innovation. Additionally, if a new product is not successful, they allow the establishment an opportunity to recoup the costs associated with developing it (Muhsin and Jasim, 2023).

- **Designers:** Due to their limited capabilities and the low cost of hiring them, small companies frequently benefit from these external designers. Some industries need to draw ideas from outside the company.
- **Research Department:** The Research Department is one of the sources that can offer helpful tips and recommendations for the product development process because participating in idea generation has numerous advantages.

Theoretical Framework

The conceptualization of the study's theoretical framework is presented in this part. The concept of the resource-based perspective of corporations can help organizations understand the new and difficult strategic dilemmas that the modern world brings. Since the first groundbreaking research in the mid-1980s to the present, the study of resources—tangible vs. intangible assets and capabilities—has created a considerable corpus of theoretical and empirical work. The capabilities of managers and organizations are covered. The internal environment of a corporation will influence how successful it is in the market, claims the RBV hypothesis. A company's resources for innovation, creativity, reputation, knowledge, talent, and change management are of the highest importance, according to RBV. These resources have an edge over rivals when they are valuable, uncommon, and irreplaceable.

The ABC method assesses the product for both production and nonmanufacturing costs. This method detects and assigns all non-manufacturing costs for particular commodities, including commission, transportation, and maintenance expenses. Depending on the quantity of production-related tasks, the ABC technique employs a variety of cost allocation objects. The system is therefore evaluated from the perspective of an enterprise's administration as a tool for an insight into operations, providing precise information about the structure of production costs and assisting marketing efforts.

In developed countries, the ABC technique has been used for decades since it makes it possible to efficiently and effectively document the direct vs. indirect costs of resources in businesses, giving such businesses a competitive edge (Alduais et al., 2023). The ABC technique's adoption by businesses in a developed country context is influenced by organizational features, according to prior study. The total number of employees, cost

information, company type, product diversification, relevance of cost information, and indirect cost as a percentage of total cost are the six criteria Anderson (1995) identifies as influencing the acceptance of the ABC method in the context of the US automobile industry.

ABC supporters consider it to be a performance indicator (Nimtrakoon and Tayles, 2015). The requirement to increase performance justifies its use. In fact, ABC is thought of as a tool that helps organizations understand cost factors (Pokorna, 2016). The elimination of low-value-added activities, performance measurement, budget development, and monitoring, analysis of the profitability of products/services and customers, monitoring of cost-cutting actions, price-fixing, outsourcing choices, and providing quotes to clients are the main applications of ABC. To evaluate ABC adoption, we looked at the responses to the survey question on ABC usage in each company (Diavastis et al., 2016).

Al-Badr Study (2017), examined a case Study on Anabtawi Sweets Company, "The Effect of Applying ABC System in enhancing the profitability of Jordanian food industries companies. In order to determine the percentage of profit margin for each product separately, the Anabtawi Sweets Company in Jordan used the activity-based costing system to accurately calculate the costs for each product. The goal of this study was to determine the impact of this application. The Anabtawi company was chosen as a case study, and the study used the descriptive analytical approach. The study population was made up of Jordanian food industry companies (Miryazdi and Jusoh, 2015). The financial and technical information was gathered to compare the activity-based costing system to the company's traditional system, which was utilized to determine indirect costs. The investigation concluded that the activity-based costing accounting system increases profitability. One of the study's most crucial suggestions is those food companies generally, and Anabtawi Company uses the (ABC) system because of its effects on expenses in terms of lowering them, increasing profitability, and maintaining the same quality.

Al-Khasawneh (2016) investigated a field study in industrial companies operating in Al-Hassan Industrial City in Irbid, examined the effects of the target cost approach on product structure and quality-development-pricing. This study sought to determine how the target cost strategy affected the three areas of product architecture (development, quality, and pricing). In this study, the researcher used analytical and descriptive methods to determine how the target costing system affected the structure. The study was conducted on a population of industrial companies using target costing in Al Hassan Industrial City in Irbid, Jordan, which numbered (51) firms. A random sample of these firms made up 35% of the study population. The

researcher created a questionnaire to get the views of financial managers, marketing managers, production directors, and accountants. The study concluded that there is an important impact of the target cost on the quality, development, and pricing of the companies' products in Al-Hassan Industrial City, and the importance of finding a team that works on the life cycle of the product for the purposes of developing it and achieving customer satisfaction so that the product matches the standard specifications. Among the most important recommendations of the study is the need to involve workers in the process of improvement and development of products, and to create an integrated team along the product life cycle for the purpose of developing and improving it, as well as the need to activate the role of the target costing approach due to its importance in affecting the cost reduction of the product and improving the relationship with customers. Al-Yazeed, Sahari (2016), studied ABC as strategic approach to cost management. The inductive and deductive approaches were used in this study, which focused on the activity-based cost strategy for strategic cost management. This study, which concentrated on the activity-based cost strategy for strategic cost management, used both the inductive and deductive approaches. The goal of the study was to identify the activities that enhance the company's competitive advantage and those that do not, improve the latter while reviewing or discontinuing the former. This improves performance efficiency and effectiveness and reduces reliance on or resource waste on inefficient activities that don't bring value since they are seen as a waste of resources and at an increased cost. Additionally, it enhances the way resources are managed and allocated to business-relevant activities. The study concluded that the activity-based costing system has a significant impact on product design and the provision of alternatives to the proposed design in a way that guarantees cost control and optimal strategic management.

The study of Al-Dhubaibi, (2021) investigated the optimizing the value of ABC system: The role of successful implementation This study set out to look into how differently the activity-based costing system was used, how big the advantages were, and how satisfied users were with it. A questionnaire created by the researcher was distributed to industrial businesses in the Kingdom of Saudi Arabia's Riyadh region. The study's findings demonstrated that the size of the benefits realized by a company, regardless of its size, characteristics, or system features, is determined by how successfully the activity-based costing system is applied. The study's findings also demonstrated that the success of the application of the activity-based costing system positively impacts the manufacturing operations in the companies. Raucci and Lepore, (2020) studied “a simplified activity-based costing system for small and middle-sized

entities: the case study of an Italian small road company”: It sought to offer a streamlined model for this sort of business and to give a cost entrance model based on activity in small and medium-sized companies in Italy. The study utilized a descriptive method (case study) of a road company in Italy. The business has two managers, three departments, and 15 staff, including accountants, in the administrative office, 110 drivers in the transportation department, and 10 mechanics in the maintenance department. In collaboration with both managers and employees, a model was created. Financial reports were analyzed according to activities, and the cost of each activity was determined. Employees and managers were also interviewed about the organizational culture's dimensions, interviews were analyzed. One of the most significant findings was that the activity-based cost strategy was the factor in the emergence of cost estimation systems and the improvement of operations.

What makes this study unique is how it develops and improves product quality using the activity-based costing system. Additionally, it helps decision-makers by informing them of the value of using the activity-based costing system and its role in developing products as well as in maintaining the company's competitive position and increasing profitability (Tengtarto et al., 2023). This is especially true given that there aren't many studies in Jordan's industrial sector that deal with these issues, so this study is a scientific addition to earlier studies that link the activity-based costing system to product development in the country. According to the previous literature, the main hypothesis of the study can be stated as follows:

There is no statistically significant effect at the level of significance ($\alpha \leq 0.05$) for applying the ABC system to product development in the industrial public shareholding companies in Jordan.

STUDY METHODOLOGY

This section contains the study methodology and data collection methods, as well as an explanation of the study population and its sample, an explanation of the study tool used and its stability, and a presentation of the statistical methods used in analyzing the results of the study.

To achieve the objectives of the study and test its hypothesis, the (descriptive) analytical descriptive approach was used to describe the independent variable and the dependent variable, and (analytical) to analyze the data obtained, through a comprehensive survey of the study sample through questionnaires valid for analysis.

Data Collection Sources

To achieve the objectives of the study, two types of data were used:

Secondary data: Information for the theoretical framework was gathered from publications linked to the subject of the study, including books, articles, and studies, as well as working papers presented at conferences that covered similar issues.

Primary data: The demographic information for the study's sample population was divided into the first and the influence of implementing strategic cost management on product structuring in Jordanian public shareholding industrial enterprises was shown in the second portion of the questionnaire.

According to the statistical bulletin of the Amman Stock Exchange and the Securities Depository Center, (40) companies were chosen as a study population from among the industrial public shareholding companies listed with the Securities Commission, which would total (56) for the year 2022. These companies' accountants, production and sales managers, and financial managers all received questionnaires.

Statistical analysis methods:

To show the impact of using the activity-based costing strategy on product development in the industrial public shareholding companies in Jordan, this study relied on both descriptive statistics and analytical statistics.

The program package SPSS was used to analyze the data and derive findings pertaining to the statistical techniques applied in the study, specifically:

Descriptive statistics: In order to describe the opinions of the study sample regarding the study variables and to assess the significance of the statements made in the questionnaire, descriptive statistics are used to describe all study variables using the arithmetic mean, standard deviation, and the highest and lowest value for each variable.

Cronbach's alpha equation was utilized to evaluate the validity of the data-collecting method that was employed to measure the study's included variables.

Pearson's coefficient of correlation.

Simple regression analysis: To test the impact of an independent variable on a dependent variable using simple regression analysis.

RESULTS AND DISCUSSION

The questionnaire was distributed to all participants to collect the necessary data for the study, and a five-point Likert scale was used (strongly disagree, disagree, neutral, agree,

strongly agree). An ordinal scale was adopted for these numbers in order to give the arithmetic mean meanings using the ordinal scale of importance, as it was used when analyzing the results.

As for the limits adopted by this study when commenting on the arithmetic average of the variables included in the study model, they are (weak effect level, medium effect level, high effect level) and based on the following equation:

Category length = (the upper limit of the alternative - the lower limit of the alternative) / the number of levels

$$1.33 = 4/3 = 3 / (5-1)$$

So, the levels are as follows:

- Low effect level from (1) to (2.33).
- Medium effect level from (2.34) to (3.67).
- High effect level from (3.68) to (5).

Number of questionnaires distributed and retrieved for analysis purposes:

Table No. (1) shows the number of distributed, retrieved, and valid questionnaires for the purposes of statistical analysis

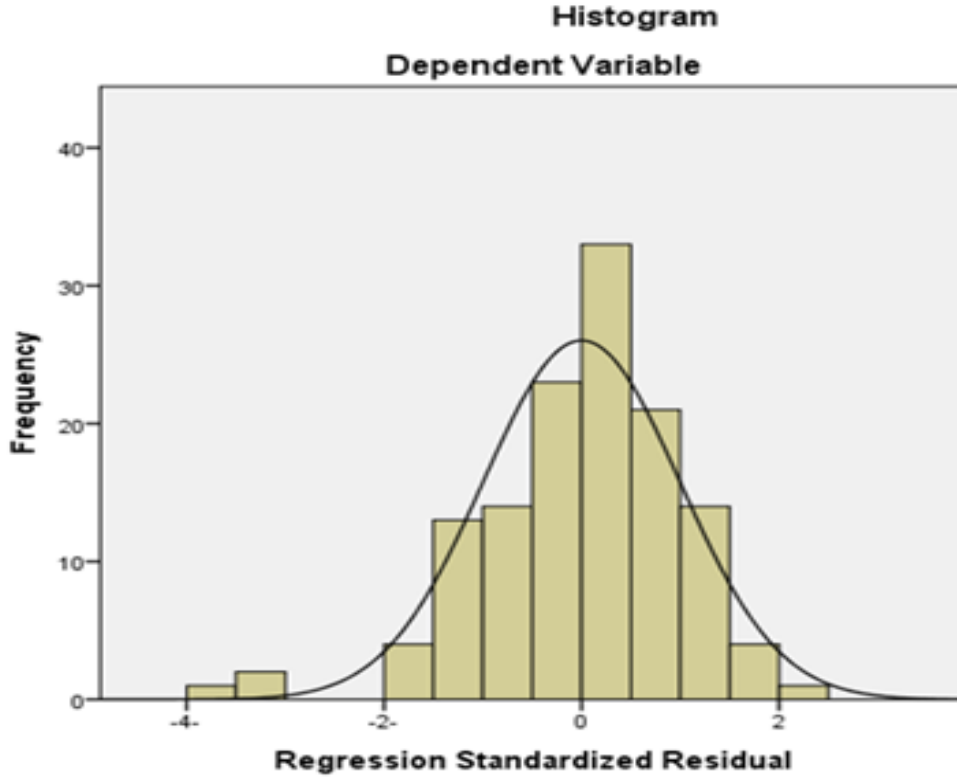
Questionnaire	Number	Percentage
Distributed questionnaires	160	100%
Retrieved questionnaires	140	87.5%
Questionnaires not valid for analysis	8	5%
Questionnaires subject to analysis	132	82.5%

Source: Prepared by the author (2023)-Field data

The above table shows that the number of questionnaires distributed amounted to (160) questionnaires to the participants, where (140) questionnaires were retrieved, with a rate of (87.5%), the questionnaires not valid for analysis amounted to (8) questionnaires with a rate of (5%), while the questionnaires subject to statistical analysis amounted to (132) questionnaires with a rate of (82.5%), which is a statistically acceptable percentage where the results of the study can be generalized.

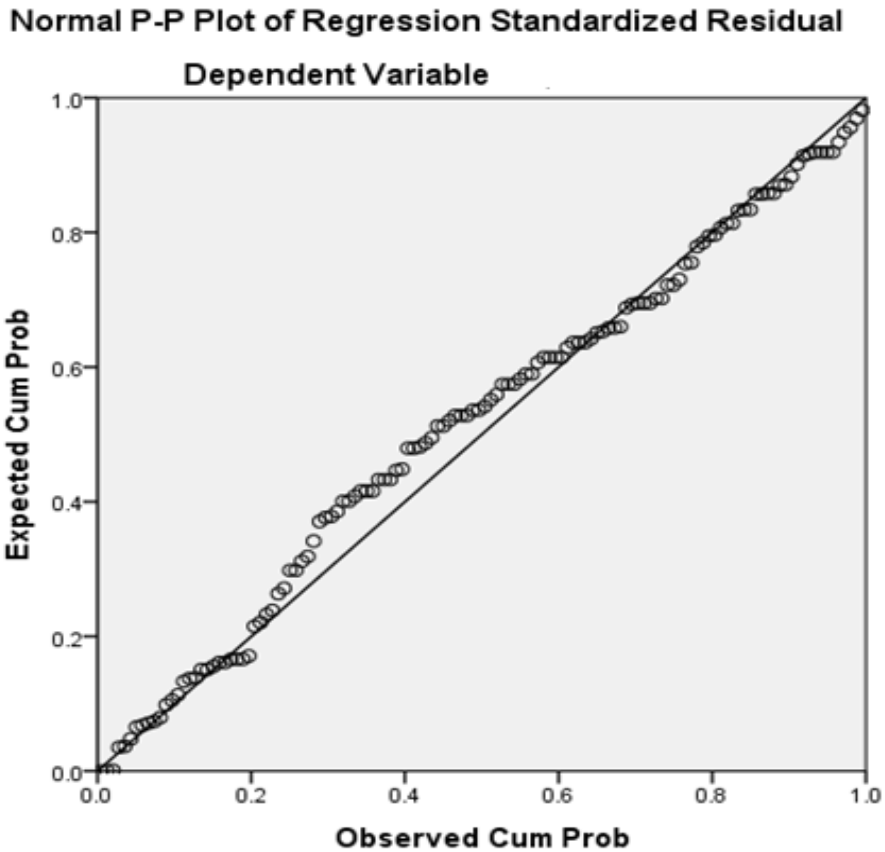
Furthermore, statistical findings confirmed that there is a linearity relationship between (IVs) and (DV), result of scatterplot in addition to dispersion and Homoscedasticity after collecting the final data from the study sample, these results are shown in figures 1, 2,3 and 4:

Figure (1): Dependents variable (Product Development)



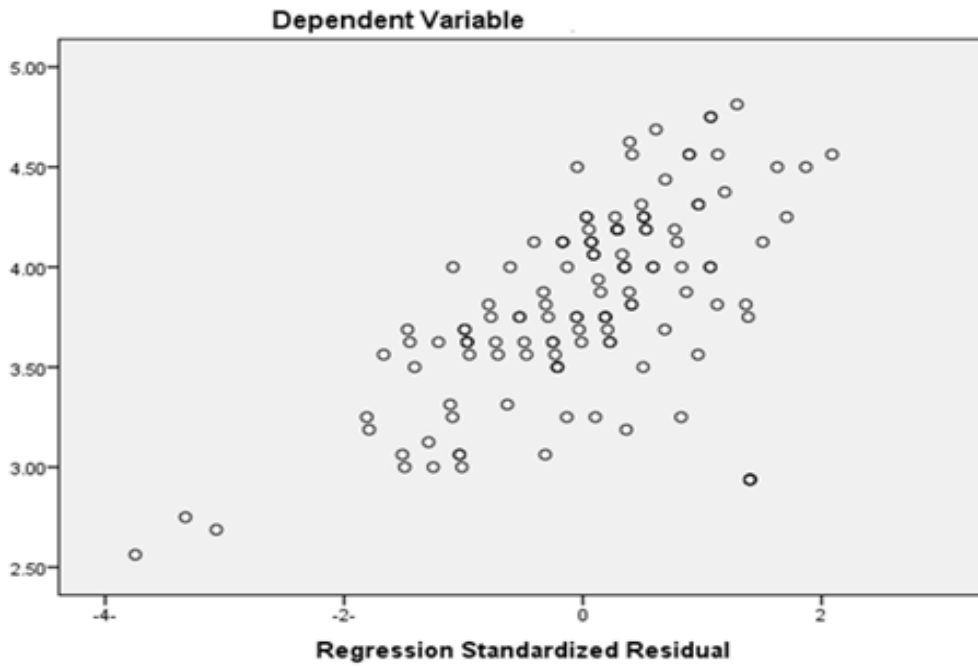
Source: Prepared by the author (2023)-Field data

Figure (2): Normal p-p plot



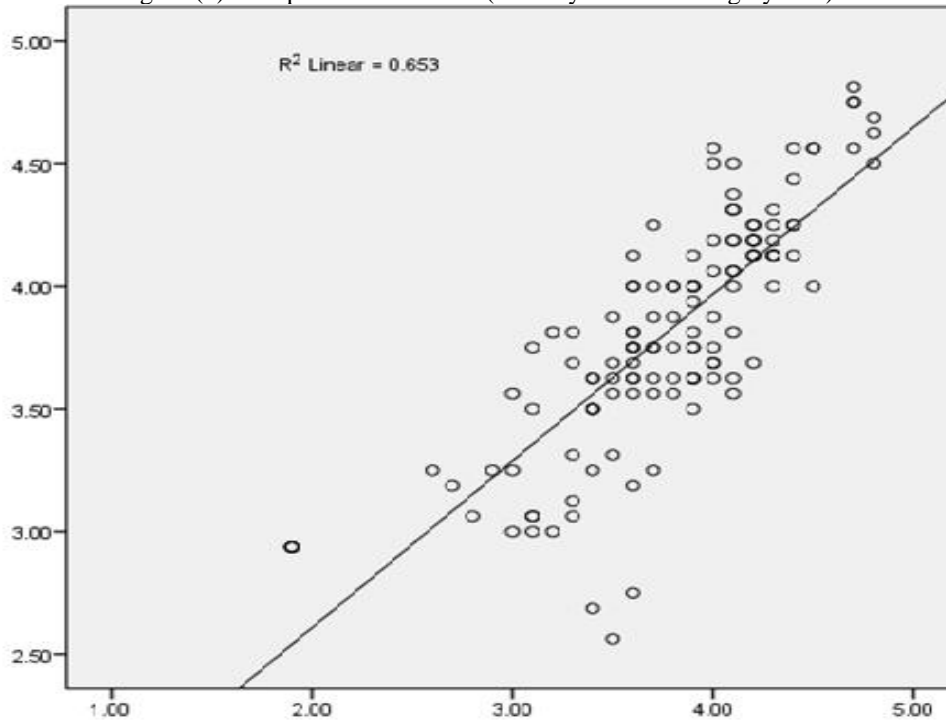
Source: Prepared by the author (2023)-Field data

Figure (3): Dependent variable (Product Development)
Scatterplot



Source: Prepared by the author (2023)-Field data

Figure (4): Independent Variable- (Activity-based Costing System)



Source: Prepared by the author (2023)-Field data

The stability of the study tool:

For the purposes of verifying the stability of the study tool, Cronbach's Alpha equation was used, where the value of the stability coefficient between the items of the activity-based costing variable was (0.824), and between the items of the product development variable (0.715), and with regard to the dimensions formed for the study variables, we find the stability values ranged between (0.701 and 0.840), which indicates the very validity of the questionnaire, and good stability of the study tool, as all the values of the stability coefficient are greater than 70%, which is unanimously agreed upon as indicating the stability of the study tool, and Table No. (2) shows that:

Table (2): The values of the internal consistency stability coefficients

Variable	The dimension		Cronbach alpha value
	The number of paragraphs		
Dependent variable	Activity-based costing system	7	0.824
	Development		0.715

Source: Prepared by the author (2023)-Field data

Pearson correlation coefficient:

It is a measure of the linear relationship between the independent variable and the dependent variable, with a range of -1 to 1. This value indicates the strength of the relationship between the independent variable (activity-based costing system) and the dependent variable (product development).

The results of the study showed the relationship between the variables as shown in the following table:

Table 3: Pearson correlation coefficient

Variants	Correlation coefficient	Statistical significance level	Relationship strength
Activity-based costing system with product development	0.518*	0.000	High

Source: Prepared by the author (2023)-Field data

* The correlation coefficient is statistically significant at the level of significance (0.05 $\geq \alpha$).

Descriptive results:

Arithmetic means and standard deviations were extracted for each variable of the study and for its dependent items, rank, and degree of agreement:

- Activity-based costing.

Table No. (4) Arithmetic means and standard deviations for the activity-based costing system variable (independent variable)

Number	Paragraphs	AM	Standard deviation	Degree of approval
1	The company's management replaces activities that do not add value with more effective activities	3.78	0.82	High
2	Detailed information about the company's activities is the basis for product quality	3.45	1.33	High
3	The activity-based costing approach contributes to identifying activities that improve performance	3.23	1.40	High
4	The financial and non-financial information provided by the activity-based costing approach helps the company's management to use it in evaluating the efficiency of performance	3.58	0.91	High
5	The company's management is in the process of improving the efficiency of activities that do not add value to the service by replacing them with more effective activities	4.11	0.98	High
6	The application of activity-based costing contributes to a more accurate estimate of the cost of products	4.20	1.11	High
7	The company's application of the activity-based costing system helps to reach production at the lowest costs by accurately identifying the causes of cost	4.07	0.87	High
All cost paragraphs are based on the activity		3.77	0.85	High

Source: Prepared by the author (2023)-Field data

The data of Table No. (4) indicates the importance of applying the activity-based costing system in the industrial public shareholding companies in Jordan, where the total arithmetic mean was (3.77) with a standard deviation of (0.87). At the level of items, there were (4) paragraphs with a high degree of approval and (3) paragraphs with a medium degree of approval. The highest degree of approval was for paragraph No. (6), "The application of the activity-based costing system contributes to a more accurate estimate of the cost of products" in the first place, with an arithmetic mean of (4.20), while paragraph No. (3) came, "The activity-based costing system contributes to determining the activities that improve performance " ranked last with an arithmetic mean of (3.23).

- Product development

Table No. (5) Arithmetic means and standard deviations for product development

Number	Paragraphs	AM	Standard deviation	Degree of approval
1	The company adopts quality policies to ensure customer satisfaction and loyalty	3.92	0.77	High
2	The company takes into account the development of the product by choosing the most appropriate design during the design phase.	3.53	1.21	Medium
3	The administration adopts policies that lead to the design of new products in the shortest time The administration periodically surveys the market to collect the necessary information for product development	3.98	0.93	High
4	The management aims to develop successful products by balancing the company's capabilities with the needs of customers.	3.95	1.24	High
5	The administration seeks to integrate technology into the development process through the latest programs dedicated to this to product development	3.69	1.27	High
6	The administration seeks to integrate technology into the development process through the latest programs dedicated to this	3.51	1.50	Medium
All paragraphs of product development		3.76	0.85	High

Source: Prepared by the author (2023)-Field data

The data of Table No. (5) indicate the importance of the dependent variable for product development, as the total arithmetic mean was (3.76) with a standard deviation of (0.85). At the level of paragraphs, there were (4) paragraphs with a high degree of approval and two paragraphs with a medium degree of approval. The highest degree of approval was for paragraph No. (3) "The administration adopts policies that lead to the design of new products in the shortest time" in the first place with an arithmetic average of (3.98), while paragraph No. (6) came, "The administration seeks to integrate technology into the development process through the latest programs allocated for that" ranked last with an arithmetic average of (3.51).

Testing the Study Hypothesis:

There is no statistically significant effect at the level of significance ($\alpha \leq 0.05$) for applying the activity-based costing system on product development in the industrial public shareholding companies in Jordan.

Table (6) The results of a simple regression analysis to test the effect of the activity-based costing system on product development

* The effect is statistically significant at the level ($\alpha \leq 0.05$).

Dependent variable	The independent variable (Product structuring)	The calculated (F) value	Statistical significance	correlation coefficient R	explanatory value R ²	regression coefficient B	Calibrated regression coefficient beta	value (T) calculated	T level of significance
Activity-based costing system	Product development	427.711	0.000*	0.875	0.653	0.841	0.876	20.685	0.000*

Source: Prepared by the author (2023)-Field data

The results of the analysis indicate that there is a statistically significant effect of the activity-based costing system in developing products), as the calculated (T) value was (20.685) and its statistical significance was (0.000).

The value of the correlation coefficient also indicates that there is a strong correlation between the activity-based costing system and product development, reaching (0.875). The explanatory value also indicates that product development explains (65.3%) of the variation in activity-based costing. In terms of the effect of activity-based costing on product development, we note from the B values that it amounted to (0.841).

Accordingly, the null hypothesis is rejected, and the alternative hypothesis is accepted, which states: There is a statistically significant effect at the level of significance ($\alpha \leq 0.05$) for the activity-based costing on product development.

Discussion of the main findings:

1. Activity-based costing contributes to the improvement and development of products by following the production stages from their inception, and this naturally leads to improving the company's competitive position.
2. The activity-based costing system contributes to identifying activities that improve performance
3. The company's application of the activity-based costing system helps to reach production at the lowest costs by accurately identifying the causes of cost
4. The company's application of the activity-based costing system helps in developing successful products by balancing the company's capabilities with the needs of customers.

5. Continuous product development helps in the sustainable development of the company by building a solid base for future growth, and thus enables the company to face future changes with high efficiency.

CONCLUSION AND FUTURE RESEARCH SUGGESTIONS

Furthermore, the findings of existing empirical studies on the effects of ABC are contradictory; whereas some researchers find strong positive associations between ABC and many dimensions of OP, others find no association with financial success (FP). The ABC literature also identifies possible operational benefits such as enhanced process effectiveness, cheaper costs, and higher quality. According to the literature on ABC, companies who employ ABC extensively for a variety of goals (such as product costing, product design, pricing decisions, outsourcing decisions, budgeting, and performance assessment) may benefit by employing it (Askarany and Yazdifar, 2012).

The approach known as "activity-based life-cycle costing" (AB-LCC) has shown to be a useful tool for long-term costing (Ahmadzadeh et al., 2011). Considering that activities produce costs and that these activities are carried out to produce or process cost objects, it follows that these activities will be given more or less priority depending on the stage of the life cycle. As a consequence, the life cycle costs related to a particular physical asset may be determined by evaluating the volume of activities carried out. In order to enable cost tracking and risk management across lengthy planning horizons, the AB-LCC adopts a complete strategy that includes process-oriented thinking (Charaf and Bescos, 2013).

It has been suggested that activity-based costing is an essential tool for an organization to enhance costing, which has implications for planning, controlling, and decision-making. The primary idea behind activity-based costing is to acquire a competitive edge and improve product costing accuracy. Activity-based costing resulted in more accurate cost calculations, allowing this business to focus on activities that provide value. Recent studies on activity-based costing revealed varying levels of acceptance throughout the world. Similarly, different organizational, cultural, technological, and technical variables explain the global acceptance and effective implementation of ABC. As a result, activity-based costing is claimed to be a more appropriate technique that gives more accurate product costing than traditional costing (Askarany and Yazdifar, 2012).

ABC implementation and organizational performance are strongly and significantly associated, according to Faeq et al. (2018). The study found that ABC implementation serves

as a bridge between competitive tactics and organizational success. Additionally, Al-Nuaimi et al. (2017) shown in their research that employing ABC as an advanced cost management system has a significant impact on organizational performance (Charaf and Bescos, 2013). By enhancing job effectiveness, efficiency, and waste reduction, assisting the company in achieving its overall goal, enabling managers to make quality and productive decisions, and enhancing customer relationship management effectiveness and efficiency, according to the authors, using ABC as a cost management system directly affects organizational performance. The adoption of ABC has a positive impact on an organization's organizational performance, demonstrating excellent performance and a high degree of contribution to competitiveness as an essential strategic management tool (Cagwin and Bouwman, 2002).

The results demonstrate that adopting ABC enhances business registration, communication, quality, and the ability to compute the volume and cost of operations of movement-control values. It also enables better monitoring of technical difficulties that bank management has identified. In their study of South African SMEs, Dubihlula and Rundora (2014) found that the use of ABC had a positive impact on the financial performance of these companies. These results confirm our hypothesis that adopting ABC has a more advantageous effect on product development than using the conventional method. Future research should use other methods to examine the connection between ABC consumption and financial performance.

The ABC method helps management identify the activities of the organization and the amount of resources that are used by each activity. By controlling the costs of activities, such an awareness of the connections between resources, activities, and products makes it easier to regulate the costs of goods. Management can find the non-value-added tasks with the help of ABC. In order to lower the cost of the items, management might thus stop certain operations. However, ABC users expressed differing degrees of pleasure with the program and noted several applications for it. More importantly, the findings of this study indicate that not all ABC users have the same level of success. When a business successfully implements ABC on a technical level and takes into account the behavioral factors that contribute to the system's success, the business makes extensive use of the system and relies on the data it provides for costing products and services, managing costs, developing new products, and setting prices.

This study suggests the following recommendations:

- Investing in improving product research and development process through applying modern costing approaches, such as activity-based costing.

- Work on training the company's employees to develop their capabilities to serve its strategies, and thus develop its human resources, which enables the company to keep pace with the acceleration of progress in the areas of strategic costs and to employ the latent capabilities for what is in the interest of the company.
- Determining policies for collecting detailed information about the company's activities systematically, which greatly contributes to activity-based costing, determining the activities that must be given priority and eliminating activities that do not add any value.
- Work to keep pace with the public industrial shareholding companies in Jordan to the new developments in the field of cost management to adopt modern strategic cost management methods.

Future research could highlight the impact of implementing Activity-Based Costing (ABC) on the product development process in Jordanian manufacturing firms. This research can focus on identifying the key success factors and challenges of ABC implementation and how it affects the decision-making process during product development. Furthermore, future research should be conducted to explore the role of ABC in enhancing product cost management in Jordanian manufacturing firms. This research can focus on identifying the cost components of product development and how ABC can be used to allocate costs more accurately, and hence, improve cost management practices. Moreover, it would be interesting to investigate the influence of the organizational culture on the successful implementation of ABC in Jordanian manufacturing firms. This research can focus on exploring the relationship between organizational culture and the adoption of ABC as well as the extent to which it facilitates or hinders the implementation process. Conducting a comparative study of the effectiveness of ABC and traditional costing methods in product development could be interesting. This research can focus on comparing the accuracy and reliability of product costs calculated using ABC versus traditional costing methods, and the impact of using ABC on decision-making during product development. Finally, examining the impact of ABC on the performance of Jordanian manufacturing firms. This research can focus on identifying the effect of ABC on the efficiency and effectiveness of the product development process as well as its impact on the financial performance of the firm.

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