

The Contingency Analysis of Factors Influencing the Application of the Target Costing Method

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This study aims to analyse the contingency factors affecting the application of the target costing method. These factors were divided into external contingency factors, namely, competition and environmental uncertainty, whereas the internal contingency factors included company size and manufacturing technology. The study adopted a survey strategy and a questionnaire was developed as the data collection method to gather primary data from a simple random sample. The sample were accountants working in Jordanian industrial public shareholding companies, including all the financial managers of these companies. The statistical analysis program (SPSS) was used to analyse the collected data, utilising descriptive statistics and regression analysis. The results of this study show that there is a significant impact of contingency factors on applying the target costing method in Jordanian industrial public shareholding companies. Also, the study shows that increased competition, environmental uncertainty and the application of industrial technology have a significant influence on the target costing method, while company size does not significantly affect the target costing method. This study provides a set of recommendations that were drawn from the primary data analysis. The study recommends that companies should rely on the manufacturing systems that help in reducing the cost of the product, and companies should have ongoing monitoring of the competitors' products in terms of their prices and quality. In addition to this, companies should pay considerable attention to effectively identify and satisfy their clients' needs and wants, as well as the after-sale services that should be offered by companies.

Key words: *Target cost method, Contingency factor, Competition, Environmental Uncertainty, Manufacturing Technology.*

Introduction

The business environment has recently undergone a lot of change and development that is challenging for many companies. This change represents the competition facing some administrations, so it became necessary to provide some information to help them in making decisions in an environment where information technology is evolving. The external and internal environment of companies experiences many changes, including environmental uncertainty and the size of companies that directly and indirectly affect them. The company that responds to these changes by adapting and controlling the imposed requirement is considered more effective. This method is known as contingency theory. The essence of this theory depends on the concept of convenience or (compatibility) between the organisational structure and the work environment so that the organisational effectiveness is demonstrated. The suitability of management accounting systems depends on the circumstances of each organisation. That means the effectiveness of the company depends on the harmonisation between accounting systems and the contingency factors related to the organisation. Accordingly, it becomes necessary to identify, forecast, possibly control, and adapt to those contingency factors to meet the needs of the management so that it can prepare appropriate plans and achieve its objectives. Based on these changes, management is required to use contemporary management accounting methods that support competitive advantage and continuity. One of the most important contemporary management accounting methods is the target-costing method, as the afore mentioned changes vary depending on the circumstances of their application and the surrounding environment. Managerial accounting provides companies with information that helps them in planning and control, to achieve the desired goals at the lowest possible cost. The contingency theory in managerial accounting stipulates that there is no accounting system applied equally in all organisations and all circumstances but that the application is limited by a number of circumstantial factors. Hence, this study aims to identify the most important contingency factors that may affect the application of the target-costing method by financial managers and accountants in Jordanian public shareholding industrial companies. These methods are still seen as technical working tools that are not influenced by the external environment. Thus, contingency factors and their impact on the target cost method were studied.

The problem of the study and its questions

The administrations of some companies adopt managerial accounting methods to achieve the main goals represented by these companies for improving their financial position and increasing their market share. Due to the importance of contingency theory (contingency factors) and their effect in applying the target costing method, companies are required to develop the methods used. Moreover, companies should adopt modern methods commensurate with the company's abilities and the surrounding circumstances to meet the administrative need for information that is characterised by accuracy and appropriate timing

by using the method of target costing to enable it to achieve its objectives. Accordingly, the problem of the study could be formulated by the following questions:

The main question:

To what extent do contingency factors affect applying the target-costing method in Jordanian industrial public shareholding companies?

The secondary questions:

- What is the impact of the competition factor in applying the target-costing method in Jordanian industrial public shareholding companies?
- What is the impact of the environmental uncertainty factor in applying the target-costing method in Jordanian industrial public shareholding companies?
- What is the impact of the technological manufacturing factor in applying the target-costing method in Jordanian industrial public shareholding companies?
- What is the impact of the company size factor in applying the target-costing method in Jordanian industrial public shareholding companies?

The objective of the study

The main objective of the study is to analyse the contingency factors affecting the application of the target-costing method in Jordanian industrial public shareholding companies.

As well as, there are secondary objectives that could be formulated as follows:

- Identify the effect of the external contingency factors (competition and environmental uncertainty) in applying the target-costing method in Jordanian industrial public shareholding companies.
- Identify the effect of the internal contingency factors (company size and manufacturing technology) in applying the target-costing method in Jordanian industrial public shareholding companies.

The study model and the hypotheses of the study

Based on the problem of the study and its objectives, the following hypotheses were formulated as follows:

The first main hypothesis:

H₀₁: Contingency factors have no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

This main hypothesis is divided into three sub-hypotheses listed below:

H_{01.1}: Competition has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

H_{01.2}: Environmental Uncertainty has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

H_{01.3}: Manufacturing technology has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

The second main hypothesis:

H₀₂: Company size has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

Theoretical framework

Since the 1970s, contingency theory has emerged in the accounting field to avoid many criticisms directed at the traditional approaches. The most important of these criticisms were that there was no agreement on the contingency factors that should be taken into account when designing management accounting systems, and the difficulty of determining the relationship between contingency factors and management accounting systems. It is not clear whether environmental and technological factors directly affect management accounting systems or else indirectly through their impact on the organisational structure. Also, the traditional approaches did not take into account many of the internal or external environmental variables, especially when designing and operating accounting information systems. These variables contribute to the development of the methods used by management, whereas the effectiveness of any control system depends on the compatibility of these systems with the variables to provide appropriate information to managers so as to make correct and more effective decisions in their work environment that improve the performance of the company. Contingency theory adopts the assumption that there is no accounting system applied equally in all organisations and all circumstances, but that the application is restricted by a number of situational factors. Since the nature of environmental variables varies from company to company, so too the contingency theory contributes to accounting thought in proposing how to design an accounting system in a way that reflects the system's ability to adapt to any variable imposed on organisations by the environment. Hence, the contingency theory emerged in the field of managerial accounting to emphasise the importance of the external and internal environmental impact on the design of management systems, which are considered a part of managerial accounting.

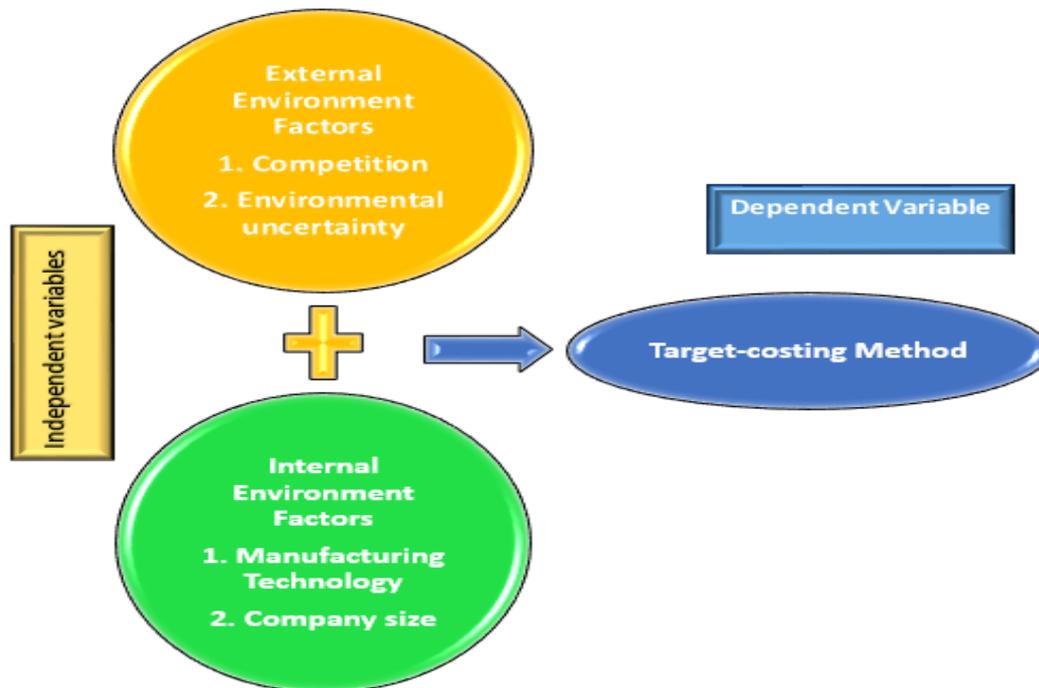


Figure 1. Study model

Therefore, environmental variables affecting the development of managerial accounting methods were classified into internal environment variables and external environment variables (Abu Haddaf, 2014). Abdelkader and Luther (2008) define contingencies as any variable that may affect the characteristics and the performance of the organisation. This concept is necessary to support modern technology. Management initially focused on cost control and financial control and is now focusing on better use of resources by having the competitive advantage to meet the challenges so that these organisations can adapt to technological developments and competitive challenges. Islam and Hu (2012) indicate that contingencies are part of the contingency theory that assumes that no comprehensive accounting system is generally acceptable and compatible with all regulations nor suits all situations and circumstances. The appropriate accounting system is usually conditioned by the internal and external environment variables in which it operates; therefore, the good design of an accounting system depends on its ability to conform to those variables. Al-Fadhel and Al-Jailhawi (2015) show that contingency factors assume that there are no optimal management methods or principles applied in all circumstances and situations faced by management, and management accounting systems are influenced by environmental and organisational factors. Abu Haddaf (2014) indicates that contingencies are based on the absence of a management accounting approach that can be applied in all organisations at all times. Rather, the best approach depends on the organisational content. Moreover, the effective and optimal performance of the organisation is achieved when there is a link between management systems and the factors affecting them.

This study shows that contingency factors are those that have an impact on the effectiveness and the performance of organisations, and, they are divided into internal and external factors, and they are unstable variables varying from time to time. This indicates that there is no accounting method commensurate with the surrounding circumstances and that can impose the compatibility with those variables.

Table 1. Literature review

No.	Title	Researcher	Objective	Important results
1	Using Target- Costing to achieve competitive advantage: Case Study of Salt Compound – Le-Wataya	Ramadan, 2017	This study aims to identify a modern method of cost accounting, which is the target-costing method. It is based on cost reduction and control while maintaining the quality required by the client.	The study has reached a number of results, the most important being that the target-costing system helps to reduce costs during the design and planning stage of a new product and that target-costing is a new approach to making profits.
2	The Factors Affecting the Different Management Accounting Practices in Small and Medium-Sized Enterprises in Jordan	AL-Hawari & Nassar, 2017	This study aims to identify the effect of some factors such as (the size and age of the enterprise and the degree of competition faced) on the use of different practices of managerial accounting systems	The results of the study showed that the factors (size and age of the enterprise and degree of competition faced) individually and collectively affect adopting managerial accounting systems
3	Environmental factors affecting the application of contemporary managerial accounting methods in Iraq	Al-Ka'abi & Al-Fadhel, 2016	This research aims to identify the most important internal environmental factors that affect the application of modern management accounting techniques in Iraqi business organisations	The study concludes that industrial business organisations, in their pursuit to achieve critical success factors to correct performance, they need to apply modern management methods such as target-costing.
4	The contingency Factors Affecting Management Accounting in Czech companies	Šiška, 2016	This study aimed to ascertain the management accounting methods used in new companies and to measure some of the important environmental factors affecting those methods.	This study reached a set of results, the most important being that the management accounting methods were significantly and positively affected by the environmental factors, and the most important of these factors is the size of the company.
5	Determinants Affecting the Development of Management Accounting Methods (A Field Study of the Industrial Companies Listed in the Palestine Exchange (PEX)	Abu- Haddaf, 2014	This study aimed at identifying factors that might affect the development of management accounting techniques in industrial companies listed on the Palestinian Exchange, based on contingency theory.	The study shows that increasing competitiveness, the increasing of environmental uncertainty, the application of modern manufacturing technology, the application of the product differentiation strategy and the trend towards decentralised structures would affect the development of management accounting techniques, in contrary to the size of the company variable.
6	Management Accounting Change in South Africa: case studies from retail services	Waweru, et al., 2013	This study aimed to test the effect of the following contingency factors (competition, technological progress, size and type of company) on the change of	The results of this study show that increased competition and technological changes are the main factors affecting the change in management accounting in the



			management accounting systems in four retailers listed on the Johannesburg Stock Exchange in South Africa.	participating companies.
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What distinguishes the study from previous studies?

After presenting the previous studies that have dealt with contingency theory (contingency factors) and management accounting methods, it was found that the previous studies were done in different environments, which reduces dependence on their findings. They also have different factors, objectives, samples and results adopted; therefore, this study is one of the first studies that address the impact of contingency factors on the target-costing method in Jordanian public shareholding industrial companies listed on the Amman Stock Exchange.

Consequently, this study was conducted by examining several contingency factors affecting the target-costing method, these being: competition, environmental uncertainty, manufacturing technology and company size. This was done by exploring the perspectives of specialised parties, namely financial managers and accountants, where these factors were carefully selected to identify the extent of their impact on the study sample (industrial companies). Most of the companies, whose full financial statements were available, and the variable of the company's size was covered by (asset size, sales volume, and the number of employees) were listed on the Amman Stock Exchange (ASE), for the period 2014-2017. The researchers also confirmed that the industrial companies apply the target cost method and that this method has responded to internal and external environmental variables.

It should be noted that the previous studies did not address these contingency factors, nor were they applying the target-costing method, in addition to the difference in the study populations and sample sizes.

Methodology and design

This study adopted the descriptive-analytical method, based on examining the problem of the study and identifying its characteristics and describing the quality of the relationships that existed between its variables.

The population and the sample of the study

The population of the study consisted of Jordanian industrial public shareholding companies enlisted in Amman Stocks Exchange (ASE), counting 63 companies according to the ASE bulletin for the year 2017. The sample is represented by the financial departments and accountants, whereby 21 companies were excluded and 42 companies were adopted due to the completeness of their financial data. A group of 42 financial managers was selected with 100

per cent participation, in addition to a random sample of 55 accountants out of 180 accountants, at 31 per cent (as at least one accountant from each company). Copies of the questionnaire (110) were distributed either electronically or manually to the individuals of the sample; 97 copies were restored and adapted for statistical analysis (88%).

The First Main Hypothesis

H_{01} : Contingency factors have no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

To test this hypothesis multiple regression analysis was used due to the presence of more than one independent variable and only the dependent variable.

Table 2 indicates the results of the multiple regression analysis tests of the contingency factors as a whole (competition, environmental uncertainty and manufacturing technology). The results demonstrate that through the values of the t-test, the three contingency independent variables (competition, environmental uncertainty and manufacturing technology) have an impact on applying the target-costing method in Jordanian industrial public shareholding companies. From Table 2, the values of t were (8.022, 7.292 and 2.622), respectively, which are statistically significant at $\alpha \leq 0.05$. Based on this, the null hypothesis is rejected, stating that "Contingency factors (competition, environmental uncertainty and manufacturing technology) have no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies." Hence the alternative hypothesis is accepted, stating: "Contingency factors (competition, environmental uncertainty and manufacturing technology) have a statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies."

Table 2. Results of applying regression equation to the contingency factors as a whole

Independent Variable	B	Standard error	beta	Calculated t	Sig.
Regression Constant	.069	.307		.225	.000
Competition	.169	.065	.189	2.622	*.010
Environmental Uncertainty	.496	.068	.502	7.292	*.000
Manufacturing Technology	.413	.051	.525	8.022	*.000

*Statistically significant at $\alpha \leq 0.05$

The first sub-hypothesis

$H_{01.1}$: Competition has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

To test this hypothesis simple regression analysis was used due to the presence of one independent variable and only the dependent variable.

Table 3 demonstrates the results of a simple regression analysis test of the first sub-hypothesis, that is, testing the impact of the external factor competition in applying the target-costing method. The results show that the calculated t-value equals 6.647, which is statistically significant at $\alpha \leq 0.05$, indicating that competition as one contingency factor has an impact in applying the target-costing method in Jordanian industrial public shareholding companies.

Based on the result the null hypothesis is rejected, meaning that the alternative hypothesis will be accepted, stating: "Competition has a statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies."

Table 1. Results of Simple Regression Analysis test of the impact of the external factor competition in applying the target-costing method

Source	B	Standard error	beta	Calculated t	Sig.
Regression Constant	2.239	.293		7.647	*.000
Competition	.504	.076	.563	6.647	*.000

*Statistically significant at $\alpha \leq 0.05$

The second sub-hypothesis

H_{01,2}: Environmental uncertainty has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

To test this hypothesis simple regression analysis was used due to the presence of one independent variable and only the dependent variable.

Table 4 demonstrates the results of a simple regression analysis test of the second sub-hypothesis, that is, testing the impact of the external factor Environmental Uncertainty in applying the target-costing method. The results show that the calculated t-value equals 6.232, which is statistically significant at $\alpha \leq 0.05$, indicating that competition as a one contingency factor has an impact in applying the target-costing method in Jordanian industrial public shareholding companies.

Based on the result the null hypothesis is rejected, meaning that the alternative hypothesis will be accepted, stating: "Environmental uncertainty has a statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies."

Table 2. Results of Simple Regression Analysis test of the impact of the external factor Environmental Uncertainty in applying the target-costing method

Source	B	Standard error	beta	Calculated t	Sig.
Regression Constant	2.204	.318		6.942	*.000
Environmental Uncertainty	.532	.085	.539	6.232	*.000

*Statistically significant at $\alpha \leq 0.05$

The third sub-hypothesis

H0_{1.3}: Manufacturing technology has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

To test this hypothesis simple regression analysis was used due to the presence of one independent variable and only the dependent variable.

Table 5 demonstrates the results of a simple regression analysis test of the third sub-hypothesis, that is, testing the impact of the internal factor Manufacturing technology in applying the target-costing method. The results show that the calculated t-value equals 6.278, which is statistically significant at $\alpha \leq 0.05$, indicating that competition as one contingency factor has an impact in applying the target-costing method in Jordanian industrial public shareholding companies.

Based on this result the null hypothesis is rejected, meaning that the alternative hypothesis will be accepted, stating that: "Manufacturing technology has a statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies."

Table 3. Results of Simple Regression Analysis test of the impact of the external factor Environmental Uncertainty in applying the target-costing method

Source	B	Standard error	beta	Calculated t	Sig.
Regression Constant	2.492	.270		9.232	*.000
Manufacturing technology	.426	.068	.542	6.278	*.000

*Statistically significant at $\alpha \leq 0.05$

The Second Main Hypothesis

H0₂: Company size has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies.

The researchers used One-Way ANOVA to identify the differences in the answers of the individuals of the sample according to the variables (average assets volume, average sales volume and the number of workers), as shown in the next table.

The results shown in Table 6 indicate the differences in the answers of the individuals of the sample of the study according to the company size variable that comprised three dimensions (average assets volume, average sales volumes and the number of workers).

For the results related to variable assets average, it was found that the F value equals 0.682 and Sig. equals 0.508, which is greater than 0.05. This implies the researchers failed to reject

the null hypothesis, stating: "Average assets volume has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies."

For the results related to the variable sales average, it was found that the F value equals 0.872 and Sig. equals 0.422, which is greater than 0.05. This implies the researchers failed to reject the null hypothesis stating: "Average sales volume has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies."

For the results related to the variable number of workers, it was found that the F value equals 1.152 and Sig. equals 0.320, which is greater than 0.05. This implies the researchers failed to reject the null hypothesis, stating that: "The number of workers has no statistically significant impact at ($\alpha \leq 0.05$) in applying the target-costing method in Jordanian industrial public shareholding companies."

Table 4. One-way ANOVA Test of the impact of company size in applying target-costing in Jordanian industrial public shareholding companies during the period of (2014-2017)

	Sum of Squares		Mean Square	F	Sig.
Average assets	Between Groups	.328	.164	.682	.508
	Within Groups	22.641	.241		
	Total	22.969			
Average sales	Between Groups	.418	.209	.872	.422
	Within Groups	22.551	.240		
	Total	22.969			
Number of workers	Between Groups	.549	.275	1.152	.320
	Within Groups	22.420	.239		
	Total	22.969			

Results

First main hypothesis

For the first main hypothesis (the impact of contingency variables as a whole: competition, environmental uncertainty and manufacturing technology in applying target-costing method), the results of the analysis of the study data using multiple regression methods show that the contingency factors as a whole (competition, environmental uncertainty, and manufacturing technology) have a statistically significant impact in applying the target-costing method in the Jordanian industrial public shareholding companies. The contingency factors as a whole have interpreted 66 percent of the variance in applying the target-costing method in Jordanian industrial public shareholding companies. Competition forced companies to improve the quality of the products provided to customers to increase their market share and to acquire new clients. Alongside, the environmental uncertainty makes the companies work in environmental circumstances that could not be predicted, as well as the modern manufacturing

processes impose the need of increasing the quality of provided products and services. These factors require applying the target-costing method to improve performance and to increase profits.

Results of testing the first sub-hypothesis (independent variable: competition):

The results of analysing the study data using a simple regression method show that competition, as one of the contingency factors, has a statistically significant impact in applying the target-costing method in Jordanian industrial public shareholding companies. Competition has also interpreted 31 percent of the variance in applying the target-costing method in Jordanian industrial public shareholding companies. This indicates that competition has a clear impact on applying target-costing methods since the increasing competition forced companies to improve the quality of the products provided to customers so as to increase their market share and acquire new clients, to face threats of leaving the market. Thus, companies are required to develop a target-costing method to support their competitive capacity in a way that improves their profitability, efficiency and survival in the market.

Results of testing the second sub-hypothesis (independent variable: environmental uncertainty):

The results of analysing the study data using a simple regression method show that environmental, uncertainty as one of the contingency factors, has a statistically significant impact in applying the target-costing method in Jordanian industrial public shareholding companies. Environmental uncertainty has also interpreted 29 percent of the variance in applying the target-costing method in Jordanian industrial public shareholding companies. This indicates that environmental uncertainty makes companies work in environmental circumstances in which it is difficult to predict the desires and tastes of consumers, and also difficult to predict the prices of raw materials and production requirements. Thus, companies are required to develop a target-costing method to support their competitive capacity in a way that faces environmental uncertainty conditions, a matter that contributes to improving the company's performance.

Results of testing the third sub-hypothesis (independent variable: manufacturing technology):

The results of analysing the study data using a simple regression method show that manufacturing technology, as one of the contingency factors, has a statistically significant impact in applying the target-costing method in Jordanian industrial public shareholding companies. Manufacturing technology has also interpreted 29 percent of the variance in applying the target-costing method in Jordanian industrial public shareholding companies. This indicates that utilising modern manufacturing processes implies benefits such as increasing the level of the quality of provided products and services, as well as increasing the accuracy of delivery and manufacturing flexibility. Therefore, companies are required to

develop a target-costing method to support their competitive capacity to keep abreast of developments in modern manufacturing methods, thus improving the performance of the company.

Results of testing the second main hypothesis (the impact of company size in applying target-costing method)

The results of analysing the study data using a one-way ANOVA method show that company size (average assets volume, average sales volume and the number of workers) has no statistically significant differences in applying the target-costing method in Jordanian industrial public shareholding companies due to these dimensions. This indicates that companies seek to develop target-costing methods by contemporary developments in a way that achieves many benefits, regardless of the size of the company, which implies the increasing awareness of corporate officials about the interest in this method.

Recommendations

- Jordanian public shareholding industrial companies listed in the Amman Stock Exchange should develop managerial accounting methods, including the target-costing method by the business environment.
- To develop the skills of workers in Jordanian public shareholding industrial companies through continuous training and evaluation of the skills they possess, and working to develop them continuously; to be able to adapt to the recent changes in all fields, especially accounting.
- Companies should be in constant scrutiny of competitors in terms of prices and quality of the products they offer.
- The need for companies to be constantly aware and to strive to achieve the desires of customers, because those desires constantly change as a result of developments in the world.
- Companies must rely on manufacturing systems that help to reduce the cost of products before running the production stages in parallel, that is, the production of several parts of the product at the same time.
- Companies should pay more attention to providing after-sales services to win the trust of the customer.
- The researchers recommend performing further studies on this subject with the consideration of other contingency factors such as the reliability of companies, the nature of their activities, and information technology, and by considering other types of companies (other sectors) to identify how other factors affect other sectors. The researchers also recommend to include the perspectives of cost accountants to expand the population of the study, which enforces the results of the study.

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