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Designing the Profit Maximization Model of Companies Using the Theory of Constraints

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Abstract

The purpose of this research is to design a profit maximization model for companies using the theory of constraints. To collect information, library and field studies were used, according to the method of data collection, documents, interviews and questionnaires were used, so the current research method is mixed (qualitative and quantitative). The statistical population of the research in the qualitative part included experts, professors and specialists in the field of management accounting, 10 of whom were selected by snowball sampling until theoretical saturation was reached, and primary data were collected through interviews and a questionnaire was designed. A questionnaire was included in the quantitative part as well. All managers and assistants of the finance and accounting departments of manufacturing companies admitted to the Tehran Stock Exchange were an unknown number. According to Cochran's second formula, 385 people were selected by available sampling. A questionnaire with 78 questions was used to check the research variables. Cronbach's alpha coefficient confirmed the reliability of the questionnaires, 10 interviewees confirmed the content validity of the questionnaires, and their construct validity was confirmed by confirmatory factor analysis. Then, the data obtained from the questionnaire was analyzed in two sections: descriptive statistics and inferential statistics. In the section on inferential statistics, the Kolmogorov-Smirnov test was used to check the type of data distribution in terms of normality or not, and then confirmatory factor analysis by LISREL 8.80 software. In order to check the construct validity of the questionnaire and to test the structural equation model with the help of Lisrel SmartPLS.03 software, it has been used to answer the research questions. The most important findings of the research showed that the components of identifying the limits of profit maximization, exploiting the limits of profit maximization, spreading the effect of profit maximization decisions, removing system limitations, and the process of continuous improvement of profit maximization, respectively, with a path coefficient of 0.41, 39 0.0, 0.43, 0.37, 0.40 have a positive effect on the theory of limitations.

Keywords: Profit maximization, Theory of constraints, Manufacturing companies, Tehran Stock Exchange.

1 | Introduction

The theory of constraints is one of the management philosophies presented by Eliam Goldratt in a series of books and articles. The theory of constraints is a systemic approach based on the assumption that every

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organization faces at least one facilitating factor that prevents it from achieving its goals. In fact, the conventional goal of profit-making units can be maximum profit. The theory of constraints emphasizes profit maximization by ensuring that the factor that causes the limitation in production is used in the most effective way [1] In the theory of constraints, the goal is to maximize added value and, at the same time, minimize operating costs related to sales and administrative wages and, at the same time, cash investment in inventories, facilities and equipment. The first step in the theory of constraints is to identify the limiting factor.

For administrative companies, skilled employees and many service organizations, the working hours of one or more key employees are often limited. Implementing the theory of constraints is often difficult because it may require a complete change in the way the company operates. For example, in multi-product companies, selling and producing the product that has the lowest selling price per unit may provide the maximum added value. Slow If the company gives a commission based on a percentage of the sales as a reward for the sales staff, this factor can be a stimulus for selling products at the highest selling price [2].

On the other hand, profitability is one of the most important elements that all stakeholders in companies attach great importance to. In this way, managers use profit and profitability to show their performance, shareholders decide to keep or sell their shares based on the company's profitability, financial institutions pay them credit based on the company's profitability, and finally, capital Investors decide to buy shares of companies based on profitability [3]. Based on micro theories, companies try to maximize their profits. The two goals of maximizing profits and shareholders' wealth may be different. The company can increase its profit of the company by investing in risky activities and plans, and this action may cause a decrease in the value of the shares and the wealth of the shareholders [4].

Currently, mainstream microeconomics usually views the firm as profit-maximizing. For a firm in a perfectly competitive market for its output, the revenue function will simply be equal to the market price equal to the quantity produced and sold, while that for a monopoly company, which chooses its production level at the same time as its selling price, the income function takes into account the fact that a higher level of production requires a lower price for sale [5]. A similar feature exists for input markets: in a perfectly competitive input market, the firm's input cost for production is simply the amount purchased for use in production equal to the unit input cost determined by the market, while a per-unit input price for quantities the higher, the greater the input purchased.

The main difference between short-run and long-run profit maximization is that in the long run, the amounts of all inputs, including physical capital, are choice variables, while in the short run, the amount of capital depends on decisions. Investment is predetermined. Firms maximize profits by operating where their maximum revenue is equal to their marginal cost. In the short run, changes in fixed costs do not affect profit-maximizing output or price. Companies simply consider short-term fixed costs as sunk costs and continue to work as before [4].

One of the issues and problems in profit maximization in manufacturing companies is the cost of production and even the cost of starting a production process, which is very high, and this will lead to a decrease in the competitiveness of products and a decrease in the profitability of manufacturing companies in the long run. Due to fluctuations in the general level of prices, high and fluctuating interest rates, fluctuating exchange rates and, as a result, fluctuating prices of imported inputs, production risk increases in these companies. This risk leads to rapid entry and exit in the production sectors and a decrease in the quality of products.

Low quality, low level of technical knowledge and lack of deep communication in the production sector of the rentier economy and lack of meritocracy, exclusivity of the production space, weakness of the banking and financing system, extensive importation and smuggling of goods, low purchasing power and lack of demand for high-quality goods are among other issues and the problems facing manufacturing companies. In fact, due to the existence of limitations in resources, the production of products should be chosen in such a way as to create maximum profit. Therefore, the goal of companies in making optimal product decisions and increasing profits using the theory of constraints is to increase the operational capacity at the constraint points.

On the other hand, the global economy and the competitive environment between companies make managers accept methods and techniques to maximize profits and reduce company costs. On the other hand, the global economy and the competitive environment between companies make managers accept methods and techniques to maximize profits and reduce company costs. On the other hand, in a competitive environment, cost reduction can be the key to the company's success. The theory of limitations can be A new systematic approach to the process of thinking [6].

The theory of limitations believes that every system has at least one limitation and the existence of limitations indicates the potential for growth and making fruitful changes. The theory of constraints (constraints) is a strategic technique that helps the company to make effective improvements in the main factors of its success [7], (by paying attention to the life cycle, the rate of material circulation and the rate of conversion of raw materials to finished goods). Managers use the thinking process of the theory of limitations as a tool to solve problems and recognize and eliminate existing limitations, mentalities and traditional ways. Increase the effectiveness, unlike the traditional methods that focus on the operating cost index or the just-in-time production method that pays special attention to reducing inventories [15].

The main focus of the theory of constraints is on increasing productivity and maximizing profit. It is through the management of limitations and increasing the production output or achievement of the organization that every organization faces at least one limiting factor that prevents it from achieving its goals [15]. Therefore, the problem of maximizing the profits of companies has a special place due to their high share in the economy of countries, companies must be aware of the cost of production. The process of discovering the cost of production plays an important role in setting up and running a profitable company.

When company managers are aware of the cost incurred in each step of production, they can optimize the processes used in production, send products realistically, and plan and implement other business plans so that, finally, the company to achieve maximum profit [8]. The theory of constraints believes that managers often do not pay attention to the amount of performance of each unit of the constraint to make decisions about the production mix. Instead of focusing on the constraint, it is possible to produce encouraging products that have a higher price or a higher performance per unit. If a product with a higher performance amount is produced regardless of the existing limitation, the profitability of the company may be greatly reduced [9].

Therefore, in order to maximize their profits, using the theory of limitations, manufacturing companies have a good performance when they produce products for sale without increasing the amount of inventory. In other words, consider the amount of customer (market) demand.

The theory of constraints, while reducing both the inventory and the production time, can increase the operational capacity and profit of the manufacturing companies. The attitude of the companies from the perspective of the theory of constraints has caused a balance in the flow of materials in the entire production system. Its repetitive cycle leads to breaking and finding new limitations in the system, and its continuous improvement feature leads to optimal achievement for all companies and profit maximization.

Therefore, according to the importance of the mentioned cases, it can be claimed that it is necessary to research the design of the profit maximization model of companies using the theory of limitations. Therefore, the current research is trying to answer the main question what is the design of the profit maximization model of companies using the theory of limitations?

2 | Theoretical Literature and Research Background

2.1 | Profit Maximization

Earnings management research literature lacks an accepted definition of earnings management. Arthur Levitt, the former chairman of the US Securities and Exchange Commission, defines earnings management as follows: earnings management is the practice of making reported earnings more reflective of management's

wishes than of the company's fundamental financial performance [9]. Skipper [10] defines earnings management as a targeted intervention in the financial reporting process with the intention of obtaining some personal benefits. These two definitions focus on the opportunistic aspect of management.

That is, the management with profit-seeking motives conducts profit management, and they implicitly state that profit management will reduce the information content of accounting numbers [11]. On the other hand, some researchers have an enlightening view of earnings management and define it as the manipulation of earnings numbers by managers. Through this management, private and confidential information about the company's future performance is transferred to investors. By accepting this definition, it should be expected that earnings management will not only reduce the informational content of earnings, but this practice will help investors better interpret the reported figures. However, the opportunism of earnings management is more acceptable in the research literature [12].

Getting involved in profit management for companies is not without risks. The risks of distorting the reputation of the company and CEOs and the risk of suing them (this happens mostly in the case of fraud) are such. Therefore, logic dictates that profit management should be done only when there are sufficient incentives for it and the benefits of this work are greater than its costs and risks. Profitability is one of the most important elements that all stakeholders in companies attach great importance to. In this way, managers use profit and profitability to show their performance, shareholders decide to keep or sell their shares based on the company's profitability, financial institutions pay them credit based on the company's profitability, and finally, investors buy Stock companies make decisions based on profitability [13].

According to micro theories, companies try to maximize their profit. The two goals of maximizing profits and shareholders' wealth may be different. The company can increase its profit of the company by investing in risky activities and plans, and this action may cause a decrease in the value of the shares and the wealth of the shareholders [3]. Therefore, the financial manager should try to determine the amount of assets and the company's growth rate and know which assets the company should invest in and which source or sources of financing to use in order to achieve the best returns.

On the other hand, profit smoothing plays an important role in the financial field of the company. Improving the awareness of professionals in the field of investment, along with the development of communication technology, has caused suppliers to invest their funds in more profitable companies. What causes success in the current situation is the optimal use of the issue of profit smoothing in companies, for which the factors affecting the performance of companies must be identified [3].

Profit maximization and minimization approaches during different stages have different life cycles. A company that has high flexibility to use these approaches will have a clear vision in the future. Profit maximization and profit minimization approaches are among the factors affecting the proper growth of companies' profits. One of the main problems in the evaluation of investments is the tendency of investors to focus on stock returns and neglect profit maximization and minimization approaches. Investors are looking to invest in projects, plans and markets that can get their expected profits with high confidence. However, if the markets have uncertainty, investors should first identify the amount of risk and then invest and buy shares [14].

2.2 | Theory of Constraints

Goldert's definition of a constraint is anything that limits the system's performance relative to its goal. He also defines the purpose of a commercial enterprise primarily as making money now and in the future. Constraints are any factors that limit the efficiency of the system in relation to a predetermined goal or purpose [9].

3 | The Theory of Constraints

The main philosophy of the theory of constraints is the optimal use of production constraints and bottlenecks. The points of the production process in which there are amounts of work inventory in the process of construction in an accumulated form and cause a decrease in the speed of the production flow are called bottlenecks [15]. This theory claims that it will lead to continuous improvement by identifying production constraints and bottlenecks in the organization. Thus, the main focus of this theory is first to recognize the constraints and then manage them in order to increase the efficiency of the system.

The theory of constraints increases the efficiency, output and profitability of the system by identifying and eliminating system constraints. Based on this theory, cost control does not affect the output and profitability of the system, but it is only the output of the system that makes it profitable. For this reason, the theory expresses the limitations of its criteria in a world that it calls the world of access and is opposed to the world of cost

4 | The Process of Implementing the Theory of Constraints

4.1 | Identification of System Limitations

This stage follows the tenets of the theory of constraints as constraints determine the performance of the system. Despite the limitations in the system, management has fewer key points to control the company's system effectively. Therefore, when evaluating the performance of the management, the amount of limitations in the system should be considered. Therefore, the most important step is to identify the limitations.

Restrictions generally occur in three ways:

I. Physical limitation (the capacity of production resources is less than the market demand).

II. Market limitation (market demand is less than the capacity of production resources).

III. Political restrictions: official and unofficial rules that limit the production capacity of the company.

Workers and production machines may cause internal limitations of the company (bottlenecks). To identify the constraint, managers first examine the factory to find out where the work-in-process inventory amounts are accumulated. Another way to identify the limitation is to compare the existing and available resources with the resources that should be.

4.2 | Exploitation of System Limitations

After knowing the limitations of the system, they should be used in such a way that the company's performance and ability to produce and sell in the short term are maximized. To achieve this goal, limited resources should be used as much as possible. In other words, limited resources should be used at full capacity and without stopping [16].

4.3 | Extending the Effect of the Decision to Other Benefits Without Restrictions

After determining the type of product and its production rate, the production speed of other unrestricted resources should be proportional to the production speed of limited resources in order to avoid the accumulation of work in the production flow in the bottleneck. Therefore, the capacity of unlimited resources may not be fully utilized. As a result, the performance of the rest of the unrestricted resources should be measured and evaluated according to the aforementioned decision [17].

4.4 | Removing System Limitations

There are two perspectives to remove the limitations of bottleneck points. The first perspective is investing in new equipment or technologies to increase the power of bottlenecks. In this perspective, the present value of future cash flows resulting from the increase in the performance margin (added value) is from the present value of the cost. The operation resulting from this investment is more. The second point of view is eliminating activities without added value that are sometimes bottlenecks to increase productivity and reduce the time cycle [17]. If the limitation is removed, return to the first stage (continuous improvement process).

Because the goal of management is continuous improvement in the short and long term, this goal does not stop with the removal of existing restrictions. When these limitations are removed, other limitations appear. To use them optimally, it is necessary to return to the first stage (continuous improvement process) [17].

4.5 | Advantages and Disadvantages of the Theory of Constraints

Advantages are include:

I. Prepares a plan for inventory management, quality improvement and profitability in the short term
II. Simplicity and low cost
III. Understandable
IV. Increasing the operational capacity of the company

Disadvantages are include:

V. Short time period
VI. It does not help managers determine company policy
VII. Assuming constant variables such as product price, customer order, technology and production decisions
VIII. It is not very useful in long-term decision-making, such as product pricing [18].

5 | Background Research

Qizi [1] investigated the use of new information technologies in the process of studying the theory of limitations. In this article, the use of computers in the process of preparing future bachelor of mathematics as an effective learning tool is discussed. The results showed that its role is specified as a means of visual and dynamic presentation of information, its use in the course materials-mathematical analysis, that is when introducing and combining concepts such as the limit of a numerical sequence is revealed.

Tsionas et al. [9] investigated the endogenous efficiency of dynamic profit maximization in intertemporal production models of risky behaviour. The results showed that the most important inputs are labour, equity and inventories. However, technical changes and productivity growth are small. Investments have a high degree of elasticity for labour inputs but much lower elasticity for stocks, inventories, capital, and advertising. The findings provide an understanding of the intertemporal behaviour of investments in managing adjustment costs, input elasticities and productivity growth, where efficiency adjustments are cheaper than capital adjustments. Labour elasticity is highest, and productivity growth is very low.

Zare and Shakarian [7] investigated the spread and evaluation of the theory of limitations and created reactions in accounting and management culture. The results showed that the survival of cost accounting against the continuous attacks that are made on it is similar to the possibilities of Goldratt in the section related to the ability of regulations to make changes and make mandatory improvements in the form of programs and educational programs.

Nejabat et al. [17] investigated the relationship between the application of the theory of constraints and the improvement of the competitive position by considering the mediating role of strategic intelligence in sports

clubs. The results showed that there is a direct and significant relationship between applying the theory of constraints and improving the competitive position of sports clubs and strategic intelligence.

Baki and Cheng [8] investigated a linear programming model to maximize product mix profit in a small-medium enterprise. The purpose of this study is to identify the current process in the production line and formulate a linear programming model that suggests the appropriate product mix to ensure optimal profitability for the company. The results showed that optimizing the product mix is one of the main keys to production planning. Many companies have used the linear programming model in determining the optimal mix of different products to generate maximum profit.

Giorgione [3] investigated dynamic pricing strategies in the carsharing business, profit maximization and equity considerations. The results showed that car sharing is a very complex service that has many interacting factors. This criterion allows the interaction of several factors that, through the functional relationships between the supplier's decision-making parameters, can introduce indicators to evaluate the quality of solutions that cannot be easily extracted analytically.

Jamal Manesh et al. [19] presented a non-linear model for maximizing the profit of electric power plants in the long term. In this research, time series models were used to predict variables. Then, using these variables, a non-linear profit maximization model was implemented using Games software. By optimizing the profitability model, the optimal amounts of water storage and release from the reservoirs of the dams have been obtained for 24 months in order to achieve the maximum profit for the electric power plants by observing the technical and economic constraints.

Kirche et al. [20] presented cost and benefit models in the presence of flexible variables. In this article, profit and cost evaluation models are presented in the presence of these variables. The nature of flexible variables is determined in line with the lowest cost in the cost model and the highest profit in the profit model. In order to check the capability of the model, the proposed models have been applied to the real data of 50 banks in the United States.

Berry and Smith [21] presented a contingency model of the impact of board structure on profit maximization: a structural equation approach. The results of the research showed that competition, business strategy and company size as contingent factors have a positive and significant effect on the structure of the board of directors. Also, the structure of the board of directors has a mediating role in the relationship between contingent factors and profit maximization, and compatibility between these factors and The structure of the board of directors affects the quality of profit. Therefore, the impact of the structure of the board of directors on profit maximization can be explained by considering the contingency factors in the form of a structural model.

Sahibipour and Fatehi [4] studied the stratification of indicators effective on profit maximization in insurance companies using interpretative structural modeling. In this research, due to the nature of the work and the use of interpretive structural modelling techniques, structured interviews along with questionnaires were used to collect information. According to the interpretative structural modelling model, the most effective indicators are indicators 4) being in sync with technology and 6) service quality, and the most effective indicator is also identified as index 12) return on equity.

Bahmani and Nezam Taheri [5] investigated the effects of profit smoothing on reducing the risk of falling stock prices in the Tehran Stock Exchange by using maximization and minimization approaches. The result of examining the second hypothesis shows that there is a significant relationship between profit smoothing and the risk of falling stock prices in companies with a profit minimization approach.

Zaker and Waziri Gohar [6] investigated the effective management of the critical chain in the project with the theory of constraints. The results showed that the critical chain method of project management requires periodic updating in the set time to complete the tasks. This information is used to update the status of various buffers and provides information about when it is actually necessary to apply some corrective action.

Saadati and Mohammadnejhad [22] studied the design of optimal demand response planning with the aim of maximizing the retailer's and customer's profit using the stock market algorithm. The results show that the effectiveness of the demand response program leads to the reduction of the electricity bill with regard to maintaining the comfort of the consumer and also to the increase of the retailer's profit, which is favourable for both the retailer and the customer.

Dinkani and Ebrabi [23] presented a model with traceability in a sustainable supply chain based on the theory of constraints. Based on the opinions of experts and managers (using a questionnaire), the limitations of key performance indicators were prioritized and finally critical points were identified for each stage. After analyzing the data and using the opinions of experts and using previous studies to fix or reduce the critical points and existing standards, an attempt was made to present a suitable model.

Picciotto [24] determined appropriate strategies for low irrigation with the aim of maximizing social benefits. The findings show that in determining the price of irrigation water, the efficiency of irrigation water consumption at the farm level and net social benefits should be considered. Considering that there is a limit in increasing the price of irrigation water from the perspective of social benefits.

Chan and Chan [25] discussed the impact of earnings characteristics on stock pricing models and earnings quality. The results of this research show that during the studied period, there is a positive and significant relationship between pricing models, profit quality and profit characteristics (profit stability and profit predictability) and between profit smoothing, profit quality and price models. There is a negative and significant relationship. Also, in this research, models have been determined to predict and determine the intrinsic value of stocks.

6 | Research Model and Hypotheses

Considering that the purpose of the current research is to design a profit maximization model for companies using the theory of constraints, the nature of the research is exploratory, and it does not have a conceptual model, so the conceptual model is used for descriptive research. Also, due to the exploratory nature of the issue, no hypothesis was proposed.

7 | Research questions

I. What are the dimensions and components of the theory of limitations in manufacturing companies?

II. What are the indicators of profit maximization in manufacturing companies?

III. What are the dimensions and components of the theory of constraints that influence the maximization of the profits of companies?

8 | Research Methodology

Library studies and field research methods were used to collect information. Therefore, according to the data collection, there were two types of document review tools and interviews and questionnaires as follows:

In the review of documents and documents, in order to collect information in the field of theoretical foundations and research literature, library resources, articles, required books and also the global information network were used.

Also, in the current research, interviews were used to collect qualitative data. Therefore, in-depth and semi-structured interviews were used to collect the required data. Finally, the questionnaire was also used to describe the perspective of the researched community. The researcher created the mentioned questionnaire, and it consists of three parts. The first part of the questionnaire includes a brief explanation of the questionnaire and how to complete it in order to make the respondents more clear. The second part of the questionnaire includes personal information with demographic questions such as gender, educational qualification, etc., of the respondents. The third part contains questions related to research variables. The

design of the questionnaire in the third part is designed in a closed form. Also, the questionnaire used has a Likert scale, so 5 options (completely agree, agree, have no opinion, disagree, completely disagree) are used for each question. For the strength of the research as much as possible, the point of view of experts and respected professors, especially the supervisor, was used to check validity, and Cronbach's alpha was used to check the reliability of the research. Cronbach's alpha results of the questionnaire shown in *Table 1*.

Table 1. Cronbach's alpha results of the questionnaire.

Variable	Dimensions	Number of Uestions	Cronbach's Alpha
Theory of Constraints	Identify the limits of profit maximization	16	0.88
	Exploitation of profit maximization constraints	8	0.86
	Diffusion of profit maximization decision-making effect	13	0.89
	Remove system limitations	14	0.90
	Continuous improvement process of profit maximization	12	0.90
Profit Maximization	-----	14	0.86

8.1|Population and Statistical Sample

The statistical population of this research consists of two parts as follows: in this part, the statistical population and sample method and sample size were presented based on the separation of qualitative and quantitative parts:

8.1.1|Statistical society

The first part: there are experts, professors and specialists in the field of management accounting whose opinions about projects can be cited.

The second part: All managers and assistants of the finance and accounting department of production companies are admitted to the Tehran Stock Exchange.

8.1.2|Sample

The first part: the number of at least 15 and at most 30 experts and specialists is sufficient, and with this amount of collected information, the saturation point has been reached, and there is no need to conduct more interviews. In this research, the saturation point was reached by interviewing 18 management accounting specialists at the university level and they were selected as a statistical sample for conducting interviews.

Second part: due to the fact that the size of the studied population is uncertain, therefore, to determine the size of the statistical sample, Cochran's second formula was used, the number of which is equal to 385 people due to the homogeneity of the members, the available method was used.

8.1.3|Data collection and analysis tools

In order to better describe the data, central indices and dispersion indices were used, and in order to analyze the data obtained from the interviews, it was used to design a questionnaire. This step led to the presentation of a general framework for designing the profit maximization model of companies using the theory of constraints.

In the quantitative part, the normality of data distribution is analyzed first. In this way, in order to verify or disconfirm the normality of the data distribution, the Kolmogorov–Smirnov Test was used to measure the variables. In the following, using the confirmatory factor analysis test, the constructs and indicators of the questionnaire were studied by LISREL 8.80 software, and then the structural equation model test was performed with the help of SmartPLS.03 software in order to confirm or disconfirm the research questions.

9 | Findings and Data Analysis

Findings related to descriptive statistics and shown in *Table 2*. additionally results of the descriptive and Kolmogorov–Smirnov test to determine the normal distribution of the research data are showing in *Table 3*.

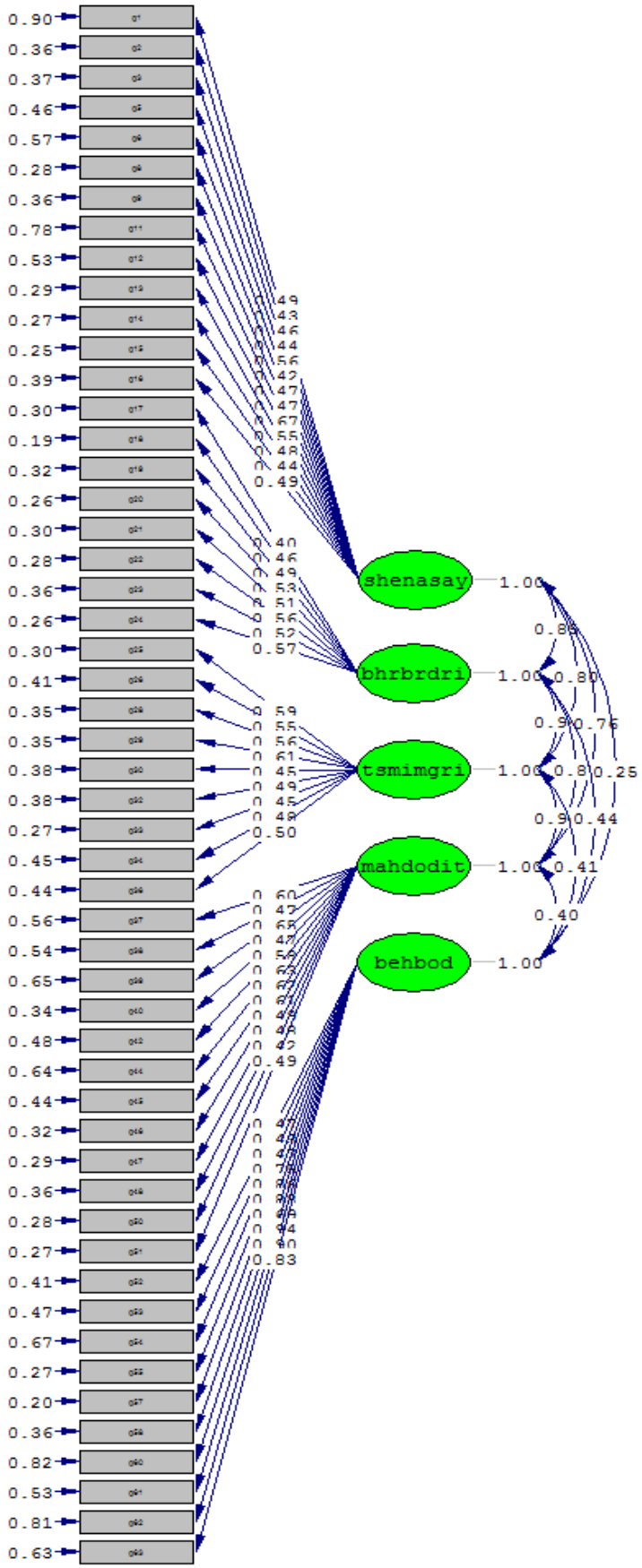
Table 2. Descriptive statistics related to demographic variables.

Indicator	Group	Number	Per Cent
Gender	Female	123	0.32
	Man	262	0.68
Education	Bachelor's degree	164	0.43
	Master's degree	198	0.51
	P.H.D	23	0.6
Age	Less than 30 years	84	0.22
	31-40 years	93	0.24
	41-50 years	106	0.28
	51 years and above	102	0.26
Years of Service	Less than 5 years	62	0.16
	6-10 years	112	0.29
	11-15 years	122	0.32
	15 years and above	89	0.23
Job title	Manager	26	0.7
	Deputy	97	0.25
	Expert	262	0.68

Table 3. The results of the descriptive and Kolmogorov-Smirnov test to determine the normal distribution of the research data.

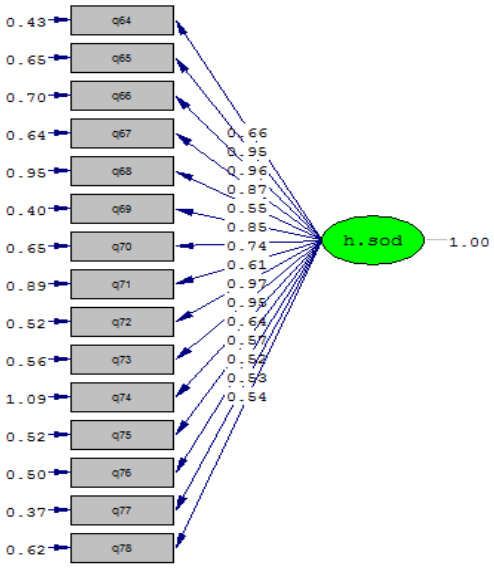
Variable	Kolmogorov –Smirnov	Meaningful	Average	Standard Deviation	Number of Samples
Identify the limits of profit maximization	4.92	0.000	3.76	1.03	385
Exploitation of profit maximization constraints	6.42	0.000	4.44	0.68	385
Diffusion of profit maximization decision-making effect	6.49	0.000	4.43	0.65	385
Remove system limitations	6.62	0.000	4.46	0.65	385
Continuous improvement process of profit maximization	7.73	0.000	4.45	0.77	385
profit maximization	4.75	0.000	4.13	0.93	385

The results of the Kolmogorov–Smirnov test show that because the significance level of the data is less than 0.05, therefore the data is abnormal. As a result, we are allowed to use non-parametric statistics and covariance- deviation hypotheses. of the data are mentioned; the results show that the than the based methods to test the Also, in this table, the results of the average and standard average of all variables is higher standard average (3). Factor analyses showing in *Figs. 1-4*.



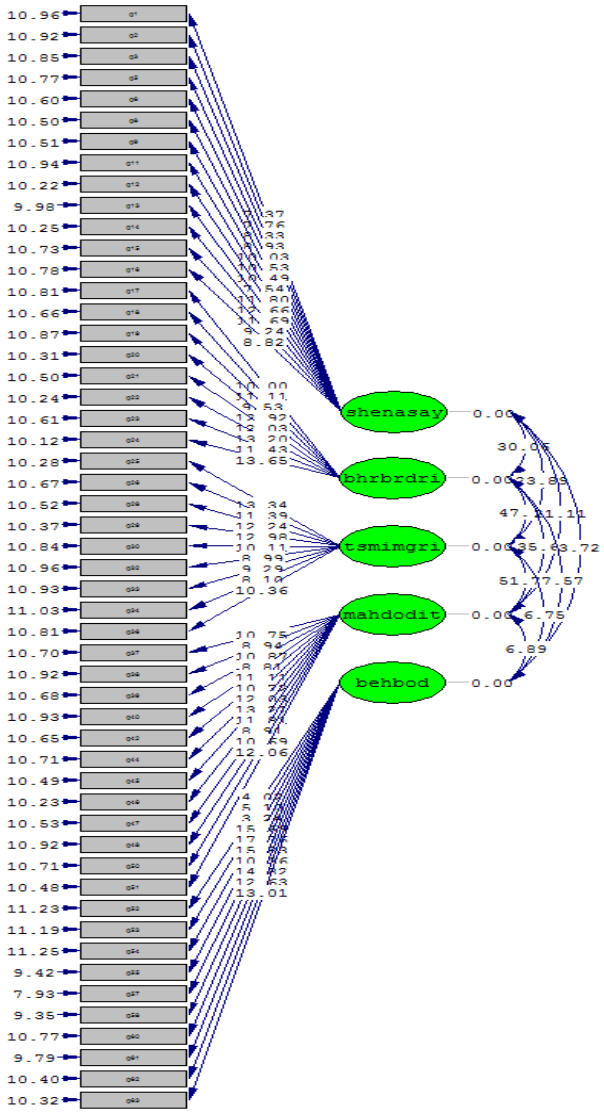
chi-square=2019.07, df=1264, p-value=0.00540, RMSEA=0.056.

Fig. 1. Factor analysis of the theory of limitations questionnaire in the standard model.



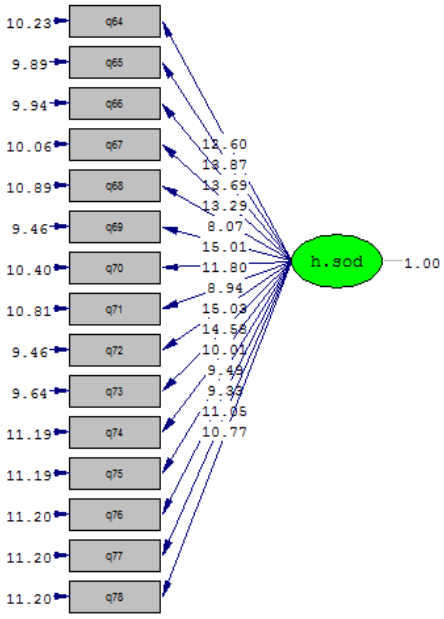
chi-square=110.40, df=90, P-value=0.00830, RMSEA=0.046.

Fig. 2. Factor analysis of profit maximization questionnaire in the standard model.



Hi-square=2019.07, df=1264, P-value=0.00540, RMSEA=0.056.

Fig. 3. Factor analysis of the theory of limitations questionnaire in a meaningful mode.



chi-square=110.40, df=90, P-value=0.00830, RMSEA=0.046.

Fig. 4. Factor analysis of profit maximization questionnaire in significance model.

Based on the figures above, 52 questions from the theory of limitations questionnaire obtained the required factor load, and 11 questions did not obtain the required factor load and were removed from the research process. The number of 14 questions from the profit maximization questionnaire also obtained the required factor load.

Table 4. Model fit indices.

Chi-Squared	Increasing Fit	Normative Fit	Adaptive Fit	Goodness of Fit	Adaptive Fit	Perfect Fit	Indicator
1.22	0.92	0.90	0.88	0.89	0.91	0.056	Model 1
1.59	0.87	0.90	0.92	0.88	0.90	0.046	Model 2
Optimal	Optimal	Acceptable	Optimal	Acceptable	Optimal	Optimal	Conditions

The results of *Table 4* show that the current research models have a good fit and the factor structure considered for it is acceptable. In other words, the data obtained from the research support and confirm the theoretical model of the research. *Fig. 5* and *Fig. 6* shows standard coefficient of research hypotheses in standard and significance mode.

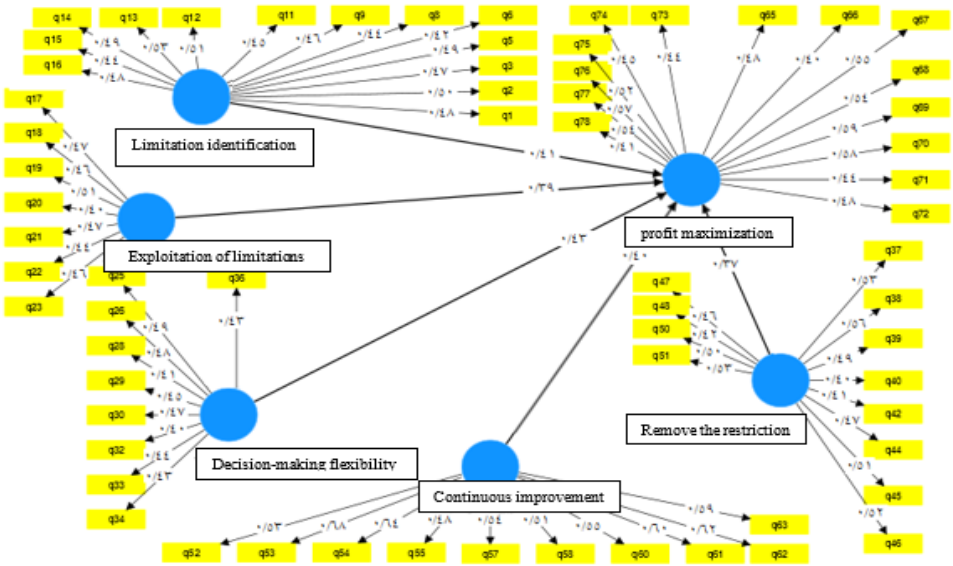


Fig. 5. Standard coefficients of research hypotheses in standard mode.

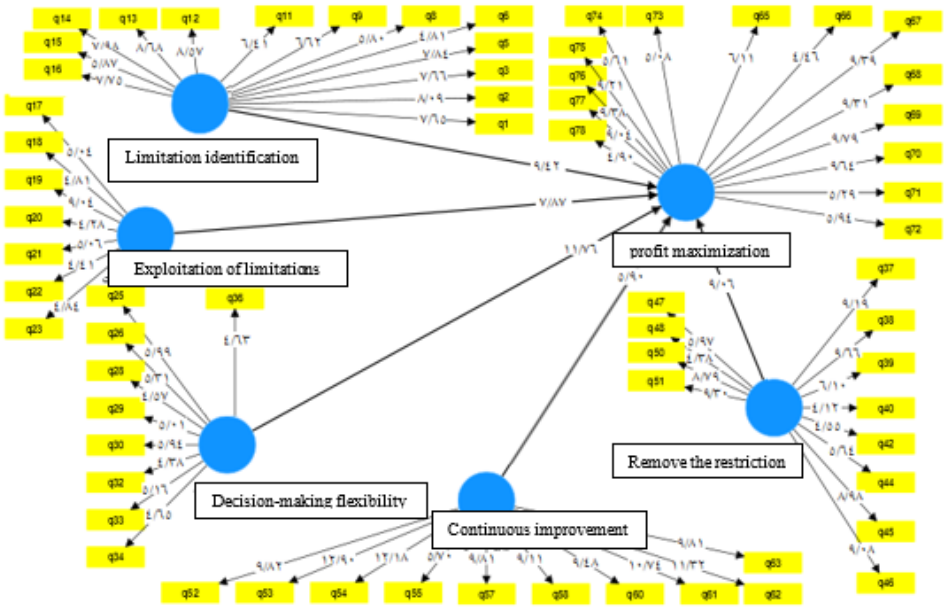


Fig. 6. Standard coefficients of research hypotheses in the significance model.

Table 5. The results of structural equation model analysis.

Result	Significance Coefficient	Path Coefficient	Hypotheses
Proving a theory	9.42	0.41	Identifying profit maximization limits from the components of the theory of limits has a positive effect on the profit maximization of companies.
Proving a theory	7.87	0.39	Exploiting profit maximization constraints from the components of the theory of constraints has a positive effect on the profit maximization of companies.
Proving a theory	11.76	0.43	The extension of profit maximization decision making from the components of the theory of constraints has a positive effect on profit maximization of companies.
Proving a theory	5.90	0.37	Removing system constraints from the components of the theory of constraints has a positive effect on maximizing the profits of companies.
Proving a theory	9.06	0.40	The process of continuous improvement of profit maximization of the components of the theory of constraints has a positive effect on the profit maximization of companies.

Based on the results of *Table 5*, it can be said that the components of identifying the limits of profit maximization, exploiting the limits of profit maximization, spreading the effect of profit maximization decisions, removing system limitations, and the continuous improvement process of profit maximization respectively with a path coefficient of 0.41, 0.39, 0.43, 0.37, 0.40 have a positive effect on the theory of limitations. Therefore, the research hypotheses are confirmed.

10 | Conclusion

The results of the research showed that the standard coefficient between the components of identifying the limits of profit maximization, exploiting the limits of profit maximization, spreading the effect of profit maximization decisions, removing system limitations, and the process of continuous improvement with profit maximization is equal to 0.41. , 0.39, 0.43, 0.37, 0.40, so it can be concluded that identifying the limits of profit maximization, exploiting the limits of profit maximization, spreading the effect of profit maximization

decisions, removing system limitations, Continuous improvement process directly and positively affects profit maximization. Therefore, the components of the theory of constraints increase the profit maximization of companies. The results of this part of the research are in line with the results of [1], [8], [9].

Managers always face problems and market constraints such as demand, competition, and customer needs to achieve the goal of profit maximization. A manager can be called successful when he can make the most use of resources and increase the profitability of his economic enterprise, considering the existence of these limitations. In order to achieve this goal, managers must have accurate and timely information about the limitations in the system, the cost of each product, and the available solutions for optimal use of these limitations. Management accounting as a system should provide this information to managers.

The traditional management accounting system and the developments in it, such as activity-based costing as well as the solutions of the theory of constraints, have been able to provide the aforementioned information well. The theory of constraints is a comprehensive management theory. This theory provides a plan to manage inventory, improve quality and improve profitability in the short term. This theory suggests that managers should identify the weakest points in the chain of events related to the production and sale of goods. This chain includes converting raw materials into products and delivering them to customers.

Bahmani and Nezam Taheri [5] believe that the theory of constraints increases the efficiency, output and profitability of the system by identifying and removing system constraints. Based on this theory, cost control does not affect the output and profitability of the system, but it is only the output of the system that makes it profitable. For this reason, the theory of the limitation of its criteria is expressed in the world that it calls the world of availability and is opposed to the world of cost.

In general, it can be said that today, due to the role of competition in the survival of companies, management accounting, which provides the information needed to perform management tasks in the organization and evaluate their competitive status, is rapidly improving and developing in order to adapt to the conditions and needs. Studies show that traditional costing systems are inappropriate for economic units operating in the new environment. The theory of constraints is a strategic technique that helps by identifying production constraints and bottlenecks for continuous increase in the effective improvement of the main success factors, and its purpose in production fields is to determine the combination of products in order to maximize profits in addition to finding bottlenecks.

Objective costing is a process to ensure that a specific product can create a satisfactory level of profitability by simultaneously giving importance to the three dimensions of quality, cost and time in terms of quality and function and price and control costs before they occur. Slow the simultaneous use of the theory of constraints for the short term and target costing in the long term for manufacturing companies that intend to pass traditional costing due to the compatibility of the two in implementation and also to be understandable to other employees in order to align with the company's goals and proper performance.

They can be implemented and keep the company in a competitive environment. Limitations can be called a new systematic approach to the thinking process. Presenting the theory of limitations and its focus on the achievement of the organization created a new paradigm that caused a change in the way of looking at the organization and the concept of productivity and its improvement strategies and increased the chances of applying an effective and fruitful change. The approach to the organization, from the point of view of the theory of limitations, causes balance in the flow of materials in the entire production system.

Its repetitive cycle leads to breaking and finding new limitations in the system, and its continuous improvement feature leads to achieving optimal results for the entire organization. Since the bottlenecks determine the true capacity of companies, their recognition will be the first step to accepting the changes caused by the theory of limitations. The first basic benefit of the theory of constraints is its orientation towards the overall output of the system and not on combinations that may have little or no effect on the overall performance of the system. According to the studies and research findings, the following suggestions are presented.

The approach to the organization from the point of view of the theory of limitations causes balance in the flow of materials in the entire production system, and its repetitive cycle leads to breaking and finding new limitations in the system, and its continuous improvement feature leads to the achievement of the optimum for the entire organization.

It is suggested that organizations identify their root problems by means of the thinking process tools of the theory of limitations before spending a lot of money on their improvement and development. With this point of view, all the external issues and problems of the organization are not examined, and only the root and escalating issues and problems of the organization are invested and planned. This action will save a lot of money and time.

Author Contributions

Hamidreza Bijannia and Fatemeh Dekamini jointly developed the research design and methodology. Hamidreza Bijannia led the qualitative and quantitative data collection, including interviews and questionnaire administration. Fatemeh Dekamini performed the statistical analyses and collaborated on drafting the manuscript.

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Data Availability

The data supporting the findings of this study are available upon request from the corresponding author.

Conflicts of Interest

The authors declare no conflicts of interest in relation to this study.

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