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Providing a Solution to improve the performance of the sustainable supply chain by identifying the financial components affecting it (SSM or Soft Systems Methodology)

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Abstract

Today, in the world of competition, it is necessary for organizations to formulate structured management plans to operate in these conditions. One of the most important issues that can be investigated in depth can make organizations successful in the field of competition, the issue of supply chain management. A new point of view is a financial point of view. Therefore, in the current research, the aim is to provide a solution to improve the performance of the sustainable supply chain by identifying the financial components affecting it. In this way, using the soft systems methodology, approach, the problem of unstructured sustainable supply chain management from the financial point of view is expressed, and then by analyzing it, the image of different players of the drawing system and their root definition is raised. In the following, a conceptual model of activities is presented using the root definition and then the model is compared with the real world. Finally, the desired changes to improve and develop the actual system are identified and programs implemented to improve the performance and increase the profitability of the supply chain management system. Finally, the financial, monetary, sustainability and risk dimensions were identified as the four main factors affecting the sustainable supply chain. The results of this study will be effective for designing improvement patterns in sustainable supply chain management.

Keywords: Sustainability, Supply Chain Management, Soft Systems Methodology, Financial Perspective, Profitability,Improve the Performance.

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1. INTRODUCTION

There has been little agreement on the definition and scope of supply chain management.[1] The supply chain is a set of integrated systems that include multiple entities in different geographic locations. These integrated systems play an important role in organizations because they are responsible for the timely inspection and control of product delivery to the end consumer and thus the financial success of the companies involved. Supply chain management is very complex due to the involvement of multiple information and material streams, the diverse characteristics of related entities, and the conflicting goals of most of them.[2] Rapid changes in the business systems environment, increasing of competition and costs for companies are forcing them to continually evaluate and shape their supply chain system and implement strategies to reduce costs and improve customer service. Therefore, a chain that lacks cooperation and coordination between its components and is unable to meet customer needs is doomed to failure.[3] The present world also faces complex problems that cannot be resolved by traditional decision-making approaches.[4] The soft operations research approach, based on the principle that the most important step in solving a problem is its proper definition, seeks to structure the problem, identify and consider all the constant and variable factors affecting the problem before seeking an answer. This approach avoids the simplification of the problem due to the ignorance of various factors affecting the problem and the relationships between them and tries to identify the coordinates of the problem as realistically as possible. Over the last half-century, new methods and methodologies have been developed to deal with turbulent and highly complex and unstructured problems that are difficult or impossible to solve. These methods and methodologies are structured and accurate but non-mathematical. All of these methods and methodologies are known as

research in soft operations, soft systems, or problem-structuring techniques, one of which is the soft systems methodology approach.[5] With the emergence of sustainability and sustainable development, new issues have emerged in the supply chain, and various definitions and dimensions of the sustainable supply chain have been put forwar. [6] Sustainable supply chain management, which contributes to environmental sustainability and sustainable production, has become an important issue in both the academic and industrial sectors. Hence, manufacturing industries have adopted sustainable supply chain practices to manage their production.[7] In fact, greater understanding of the link between sustainable supply chain practices and their practical implementation is needed, especially for companies in developing countries such as Iran that need to ensure balance between the growing economy and protection of environmental resources.[8] On the other hand, one of the most important aspects of supply chain management is its financial dimension that plays a significant role in the growth and survival of an organization. In fact, decisions related to management of asset and debt, as well as the manner and amount of financing, are always one of the most important decisions that any business faces.[9] Organizations that use supply chain financial management are likely to experience a less costly and more sustainable (financially) supply chain. It can therefore be said that supply chain financial management has provided conditions and opportunities for supply chain collaboration where all transaction parties have benefited and capital in the whole chain is improved. [10] And since the link between supply chain operations and financial performance is in the interpretation of financial goals, it is therefore important to consider the financial dimension. [11] This study identifies the factors that influence the sustainable supply chain from a financial point of view. Therefore, the present study provides a theoretical framework for creating different effective components of the supply chain from a financial point of view; the methodology of the soft systems will be used for this purpose.

2. Background Research

A great deal of research has been done on the factors affecting the supply chain, the sustainable supply chain, and the soft system methodology, which are referred to some of the most relevant ones: Tisang et al. (2018) presented a decision-making model for financing a sustainable supply chain in terms of uncertainty with fuzzy TOPSIS method. The results show that the economic factors considerably influence other aspects, and the delivery management policies are the most effective tools for enhancing financial activities of the sustainable supply chain. In addition, the findings provide a theoretical foundation that can strengthen the perception of a sustainable supply chain capital, and provides management concepts for the firms so that they can improve their performance.[12] Abdolbasit et al (2018) evaluated and quantified the risk in supply chain using hierarchical analysis. In fact, the decision making process in the supply chain includes the risks that can influence the firm's progress in introduction of new products, development of various markets, and manufacturing operations of outsourcing.[13] Mohammadi et al. (2017) designed a four-level supply chain network considering simultaneous operational and financial dimensions in a holistic and systematic approach. Modeling results and numerical solution of the model illustrate the importance of the financial dimension and the simultaneous consideration of operational-financial aspects in the mathematical model for obtaining sustainable competitive advantage. [14] Khalife (2017) in his doctoral thesis in Shiraz University designed supply chain system of the manufacturing firms with operational and financial approach. The aspects investigated in this thesis included financial components. The model was solved using content analysis and ideal planning. The case study of this thesis was petrochemical company. The research results included presentation of financial and operational variables. In addition, high importance of financial and operational approach in gaining sustainable competitive advantage was specified, The severity of corporate devaluation in contrast to equity is much higher than that of equity changes.[15] In (2022), Kiani et al., by reviewing the research literature and interviewing experts in the tile and ceramic industry, identified the factors affecting the success of the green supply chain and analyzed the problem dynamically by applying the system dynamics method. And they came to the conclusion that strengthening the skills of human resources, monitoring the implementation of laws and regulations and green suppliers, will directly lead to increasing the success of supply chain management; In the meantime, monitoring the implementation of laws and regulations is known as the most effective factor.[16] Azizi (2018) identified and prioritized the factors affecting sustainable supply chain performance in Shiraz edible oil industry. In this study, after reviewing the theoretical foundations of sustainable supply chain, the factors affecting its performance were identified and finalized by experts. VIKOR technique was used for data analysis. The results showed that among economic factors, reducing operation costs, among environmental factors, environmental cooperation with suppliers and customers, and among social factors, safety and hygiene are the highest priority.[17] In (2020), Farrokhizadeh and his colleagues investigated and ranked the dimensions of "green supply chain management" in the petrochemical industry, as well as identifying the sub-indices of these main dimensions. Dimtel's method was used for cause and effect analysis

and ranking of effective dimensions and indicators. The results showed that the dimensions of society and organizational participation and indicators of working group formation, senior management support, society's expectation from the company and environmental education and training have the highest weight and the highest importance respectively in this industry. [18] Shah Bandarzadeh et al. (2014), in a study, for presenting a model for evaluation of supply chain performance, proposed an operational model to improve evaluation of supply chain management performance based on Supply Chain Operation Reference (SCOR) model, using supply chain operation reference model. Performance evaluation indices of this model were obtained through library data collection method. [19] Wu et al. (2017) examined the key factors of sustainable supply chain management in the coal industry in Indonesia. They aimed to create a theoretical framework for sustainable supply chain management. They used a new multi-criteria decision-making approach called Dematel Analytical Network Process (DANP) and concluded that the functional dimension is the most important amongst the sustainable supply chain criteria. [25] Abadi et al., in a research in (2021), designed a world-class after-sales service model using the soft systems methodology approach. According to the procedure of the above approach, they went through six stages and finally, using the results of the previous stages and for developing the model, to reach the world class level, they presented suggestions to the authorities and stakeholders.[24]

A summary of the research background is summarized in Table 1.

Based on the literature review, it was observed that the identification of factors affecting the sustainable supply chain from the financial point of view has not been done concurrently using soft systems in industry. Undoubtedly, this type of review can take a closer look at the financial aspects of the supply chain and increase its sustainability. The present study, considering the above factors simultaneously, seeks to introduce effective factors for the success of sustainable supply chain management from the financial point of view, the results and impacts of which can be used to design sustainable supply chain improvement patterns in the industry. After defining the research methodology, factors affecting the sustainable supply chain will be identified financially using the soft systems method.

3. Research Methodology

In the present study, soft systems methodology approach was used to identify components of sustainable supply chain from a financial point of view. In fact, the current research is applied with regard to purpose, and in terms of data type, it designed soft models whose findings go beyond the researcher's understanding and interpretation after interviewing experts and reviewing documents. Also, the nature of the present study is exploratory, so it has no hypothesis. Fig. 1 shows that in the first step of this research, the primary concepts and basic information of the problematic research situation were extracted and recorded using library studies and reviewing other credible researched and articles in the field of sustainable supply chain. Then, in the second step, the stakeholders were identified and evaluated using the expert opinion. In step three, four, and five, problematic situation was defined, enriched image was drawn, and root concepts were extracted. It should be noted that these three steps are in fact the first to third steps of the soft systems methodology approach. Finally, in steps six and seven, the conceptual model of research was designed by brainstorming sessions and using the outputs of the previous steps.

On the other hand, the reason for using soft systems is issues that are difficult to structure. These issues have uncertainty characteristics and many stakeholders that can be observed in this study as the issue of sustainable supply chain from the financial point of view, due to its large scale and importance in the manufacturing process, has many dimensions and stakeholders. Also, due to variability of many financial parameters such as interest rates, inflation, etc. uncertainty is high in the financial dimension. As a result, analyses are presented that take the conditions of the problem into account. This concept is one of the innovative approaches that is rooted in behavioral sciences and in particular organizational systems. The term “soft systems” refers to a methodological framework developed by Checkland et al. at Lancaster University for solving real-world problems where multiple perspectives exist and also it has been developed for confrontation with social, political, and human problems. Checkland believes that through soft systems methodology, resolving method of soft problems can be changed. Based on soft systems methodology which is a systematic and advanced approach, each individual has a distinct attitude that leads to different views, perceptions, and practices.[26] Following are the steps of the soft systems methodology approach to design a sustainable supply chain model from a financial perspective. [27,28]

4. Phases of Soft Systems Methodology in the theoretical framework

First phase: Coping with problematic situation

The approach of the soft systems methodology is a participatory approach since it merely progress through the discussion and dialogue. In the first phase, a problem in the real world is discovered and its situation is considered. In this phase the problem is not defined, rather it is specified that what the researcher look for. In addition, the general space of the problem is also drawn.

Second phase: Drawing expressive picture

In the second phase, the situation, the individuals involved in the situation, and the problem structure are drawn in the form of expressive pictures. In drawing the picture rich of the system it is asked that all major actors and their relationships be indicated using graphical sighs and required explanations. There are not many limitations in drawing such picture, and various graphical signs can be used, and the audience can be helped to have better understanding of the picture using the explanations in different parts of the picture.

Third phase: Extraction of root definition

At this phase, the real world is come out and it is entered into the conceptual world and a system of root definition of the problem is provided.

The root definition is a statement that describes the ideal system, its objectives, the individuals involved in the situation, and the participants, and the individuals who are affected and influential on the system. A known method called CATWOE is used to create a root definition based on the expressive pictures. This method is used by the owners of the problem to formulate and define a definition and has the following components:

C customer: the customers and stakeholders, victims; who would be damaged in the system (who are they?)

An actor's: the actors and participants in the system (who are they?)

T transformation process: what is transformed by the system? What inputs are transferred into what outputs?

W worldview: what is the basic worldview of the system? (What is the basis of worldview in this system?) O owner: who is the owner of this system?

Who has the power to stop this system?

E environmental factors: which are the environmental factors, which should be taken into account?

To this end, a collection of root definitions may be developed, which are used for achieving agreement and consensus on a root definition.

Fourth phase: constructing a conceptual model

By the conceptual model in the soft systems methodology, it means a diagram of the activities with the communications related to them, which specifies the problem solving process or achievement of the goals. The conceptual model is constructed based on the concepts formed in the development of the root definitions. The model should include five to nine activities, which must be related based on the logical dependencies. Designing the conceptual model helps better representation and understanding of the activities [22]. Every problematic situation in the real world includes the individuals that perform some actions purposefully. That is, the purposeful activity models are constructed in the form of the systematic models for expressing a specific worldview, and they can be used as a tool for discovering the characteristics of the problematic human situations.

Fifth phase: Comparison of conceptual model with real world

This phase has been designed for structuring the discussion for improving the current status, and the compares the developed model with the real world. Checkland proposes using unstructured discussions, scenario making, or making following questions for comparing the conceptual model and the real world. Does this activity happen in the real world? How? How does it behave? How is it evaluated? Is this process suitable in the current situation? .

Sixth phase: Defining changes for improvement and development

At this point, any change that can have a useful result is determined for implementation. However, these changes must also be realistic in terms of cultural and organizational policies.

Seventh phase: Work plan for implementing changes

This phase is to implement the changes identified at the previous step in the field of operation and is usually carried out through the establishment and approval of an operational program.

5. Implementing Soft Systems Methodology in Case Study of Research

First phase: Coping with problematic situation

In this step, the problem situation is entered. With visiting some manufacturing companies from different industries in Guilan province, using interview and meetings with the experts of the industries, the significance of sustainable supply chain was investigated from the financial perspective. Considering that the purpose of interview is investigating significance level of the supply chain in terms of financial dimension for the industry owners, the interview items were designed accordingly. Finally, the result of the interviews indicated that significance of financial dimension is higher than other dimensions of the supply chain. In fact, result of interview was an evidence for the confirmation of the findings and library studies in the respective area, which well could measure the respective characteristic. It should be noted that it implies validity of the interview. In order to investigate the reliability, it was attempted to repeat the interview during several steps within a specific time interval. In addition, the library studies related to different years indicate the same thing. As the final conclusion of the first phase it can be stated that various factors influence performance of a sustainable supply chain, and financial dimension has higher importance because of influence on the profitability and progress in the competition world. Thus, in the current research, the problematic situation is finding factors affecting supply chain in terms of financial dimension.

Tool: 1. Interview 2. Library studies

References 1. Inter-organizational documents, 2. Papers and other research works

Output: Significance of financial dimension of supply chain among other dimensions

Second phase: Drawing expressive picture

In this phase, during the interview in which the reliability and validity was confirmed similar to the previous phase, different aspects of the supply chain in terms of financial dimension were examined. The purpose of this interview was recording ideas of experts. In addition, some studies were reviewed also for complementing and confirming expert ideas, a summary of which is given in the table below (Table 1). Finally, according to the collected data, the expressive picture agreed by all experts was drawn. In order to draw the expressive picture, the actors and individuals involved in the situation were identified, and the type of the actors' relationships was specified by interview and meetings with the experts and review of the studies. (Figure 1).

Tool: 1. Interview 2. Library studies

References 1. Documents of the firms, 2. Research works and scientific papers

Output: Specifying the main dimensions of supplier, producer, customer, market, challenges and advantages in the supply chain through drawing expressive picture (monetary component, financial component, risk component)

Third phase: Extraction of root definition

Considering the concepts discussed in the previous phase, and also through the interview and library studies, CATWOE concept in the current research is described as follows:

C: Customer, investor, supplier, producer

A: Producers and suppliers

T: Process of product production, entry of raw material, transformation of raw material to product

W: Market and competitive world and uncontrollable factors

O: Producer and customer

E: Limitations of selection of supplier, material quality, risk, challenges

Tool: 1. Interview 2. Library studies

Resources: 1. Inter organizational documents 2. Research works and scientific papers

Output: Specifying the customer, actor, transformation process, world view, owner, and environmental factors affecting supply chain from financial dimension (sustainability component)

Fourth phase: constructing a conceptual model

At this phase, in accordance with the root definition, a conceptual model is formed, depicted in Figure 2:

Tool: Brainstorming sessions, library studies

Sources: Documents of firms, research papers, and scientific articles

Output: Providing a conceptual model aiming at specifying relationship between main activities of the chain under study

Fifth phase: Comparison of conceptual model with real world

Considering explanations for this phase in the previous section, the questions can be raised for all parts of the conceptual model. For example, with investigation and analysis in the area of this research we may conclude that there is no adequate understanding for distinguishing financial dimension of factors affecting supply chain. In this case, we should move toward the next step of the conceptual model.

Tool: 1. Library studies 2. Brainstorming sessions

Resources: 1. scientific research works, 2. Inter organizational documents

Output: Feasibility of model implementation in real world

Sixth phase: Defining changes for improvement and development

Considering the concept described in the previous section, some changes necessary for the system should be identified. For example, in the fifth step, the lack of sufficient understanding to distinguish the financial factors affecting the chain was referred, thus, we can propose that a change be made to determine the purpose of profitability and cost reduction as the main goal for the organization and to identify the solutions to these goals to get enough information in this area.

Tool: Interview

Sources: Inter-organizational documents

Output: Specifying cases of change in the conceptual model

Seventh phase: Work plan for implementing changes

In this phase for providing practical program for the proposed change, training courses can be held in the organization so that all individuals of the organization get adequate information about financial dimension of the supply chain, and take step for realization of superior goals of organization. Of course, it should be noted that the current research was conducted up to just sixth step, and according to the type of organization and its governing conditions, the seventh phase is under responsibility of the organization itself.

Table 1: Summary of Research History

MCDM method	Soft System Method	Dynamics method	Mathematical method	Qualitative method	Sustainable supply chain	supply chain	Designing or examining chains	Identify chain factors	Operational performance	Financial performance	Issue	n
*					*		*			*	Decision-making model for sustainable supply chain finance under uncertainties	Tisang et al. (2018)
*						*	*			*	A framework for risk assessment, management and evaluation: Economic tool for quantifying risks in supply chain	Abdolbasit et al (2018)
			*			*	*		*	*	Supply chain design and integration of financial and operational approaches	Mohammadi et al. (2017)
			*			*	*		*	*	Design of supply chain system for manufacturing companies with operational and financial approach	Khalife (2017)
		*				*	*		*		Designing a dynamic model of factors affecting the success of green supply chain management	Kiani et al (2022)
*					*			*	*		Identify and prioritize the factors affecting sustainable supply chain performance	Azizi (2018)
*						*		*	*		Investigating and ranking the factors affecting green supply chain management in the petrochemical industry Dimetal's approach (case study of Lorestan Petrochemical)	farrokhizadeh (2020),
				*		*	*		*		Designing a Model to Identify Factors Affecting Supply Chain Performance Evaluation of Supply Chain Operational Reference Model	Shah Bandarzadeh et al. (2014)
*					*			*	*		Key factors for truly sustainable supply chain management: an investigation of the coal industry in Indonesia	Wu et al. (2017)
	*					*		*		*	Designing a world-class after-sales service model with a soft systems methodology approach: a case study of Iran's liquefied gas industry	Abadi et al. (2021)

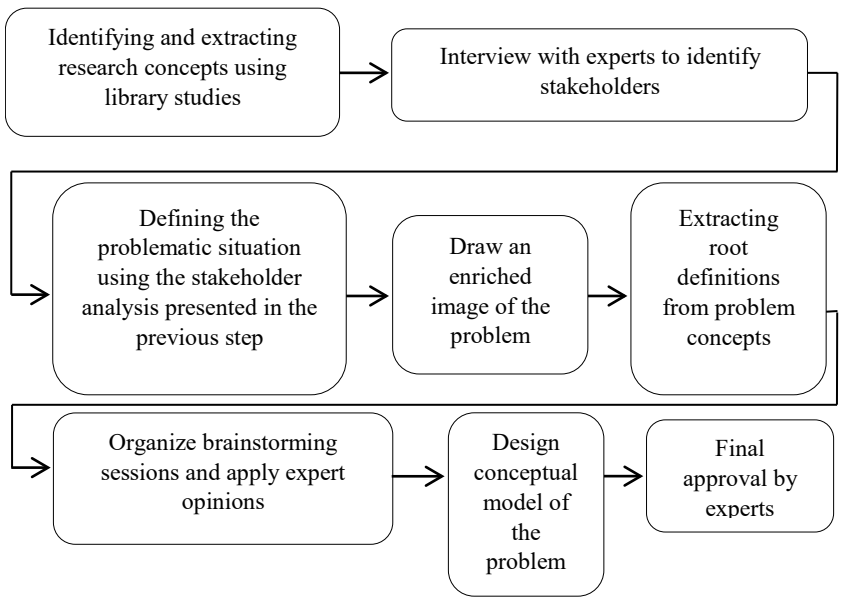

Figure 1: The Research Process

Table 2: A summary of library studies for investigating factors affecting supply chain from financial dimension

Affecting factors	Source
Adjustment of financial ratios by the manufacturer	Kristofik, Peter, et al. (2012)
Customer need in terms of quality and price	Kuei,C.-H.,Madu, C. N. and Lin, C. (2011)
Customer need in terms of quality and price	Foster Jr, S. T., Wallin, C. and Ogden, J. (2011)
Challenges and financial advantages	Crony, G., (2011)
Market and competitive environment	Shleifer, A. & Vishny, R, (1997),

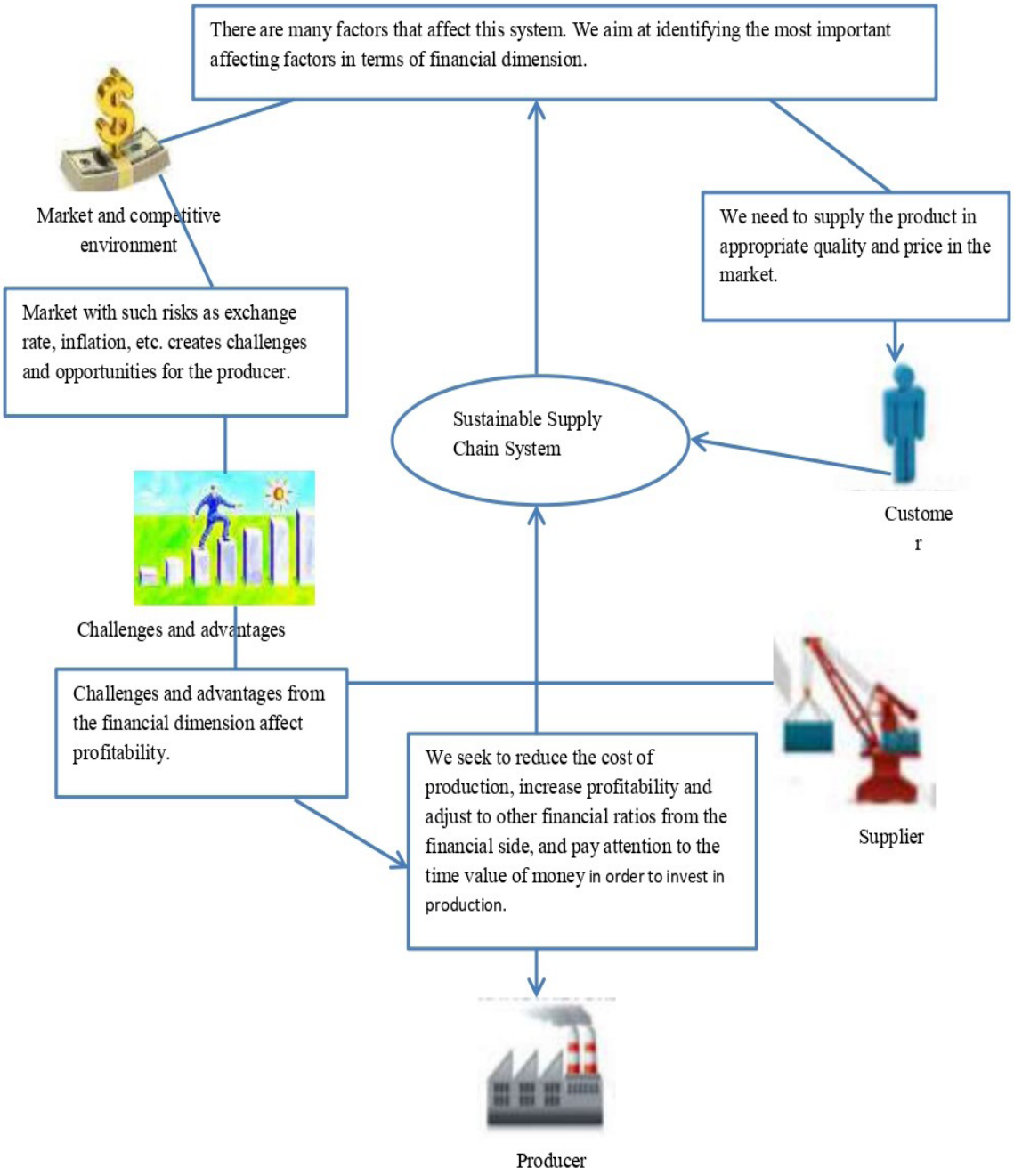

Figure 2: Expressive Picture of Research Problem
(The drawing source: authors)

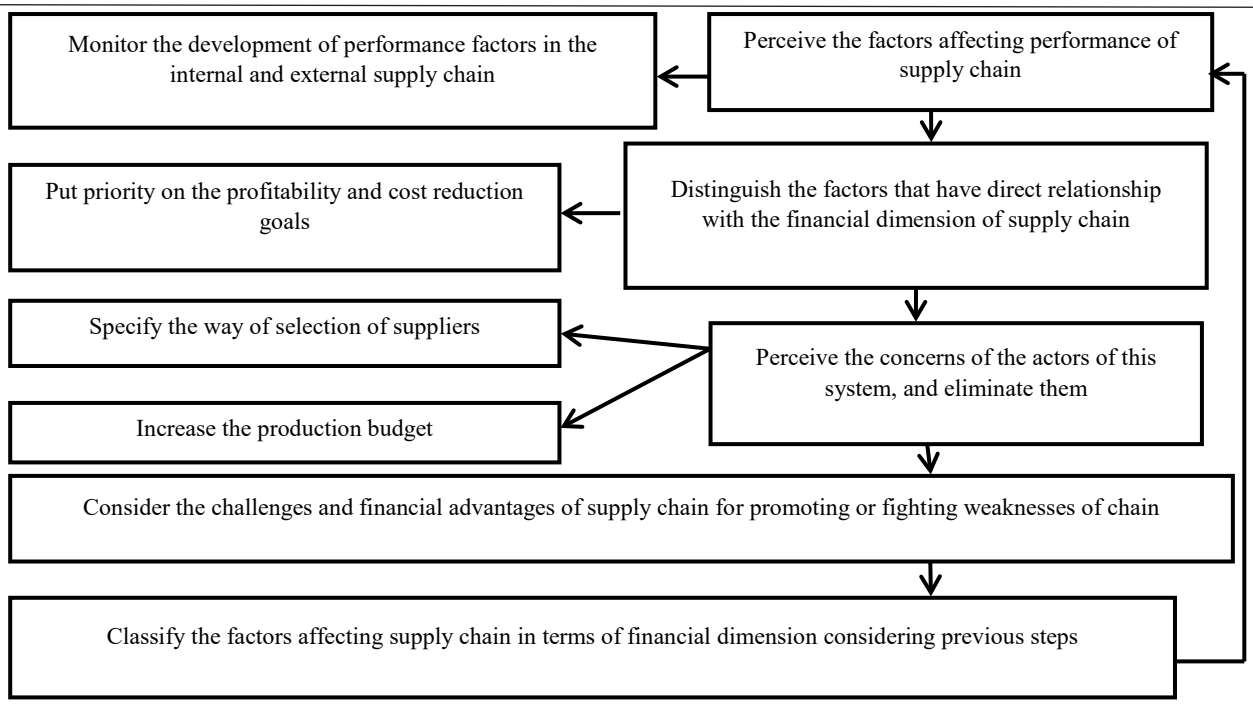

Figure 3: Research Conceptual Model
(Source: Authors' Studies)

6. Discussion and Conclusion

Today, supply chain management has become a vital factor in global competitive markets. Therefore, considering it and evaluating its functional dimensions seems necessary. In fact, given many factors involved in sustainable supply chain performance and considering the main purpose of the supply chain which is increasing profitability in the organization, identifying factors that have a direct impact on the financial dimension of the chain and can enable the system to achieve its main goal is very important. On the other hand, the method of soft systems methodology, as it seeks to structure the problem, identifies and considers all the influential control and variable factors affecting the problem before reaching the answer, so it is a complete method compared to other methods; so far, no comprehensive research has been conducted using the above method. In this study, applying soft systems methodology, the components affecting the sustainable supply chain from the financial perspective were identified, which can be a suitable solution for the success of sustainable supply chain performance. And finally, by analyzing different stages of this method, four main and influential components of the supply chain were introduced, including financial, monetary, sustainability, and risk components; it was found that these four components have financially a greater impact on a sustainable supply chain. Finally, future researches are recommended to analyze and evaluate the impact of the factors obtained in this research on the successful performance of the sustainable supply chain.

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References

1. V. Kozlenkova, T.M. Hult, D.J. Lund, J.A. Mena, P. Kekec, The role of marketing channels in supply chain management, Journal of Retailing, 91(4) (2015)586–609.
2. B. Mota, I. Gomes, A. Carvalho, A.P. Barbosa Povoa, Sustainable supply chains an integrated modeling approach under uncertainty, Omega, in publication, (2018).
3. F. Qarani, M. Amiri, L. Olfat, A. Kazazi, Designing a model for supply chain agility and considering the impact of their dimensions on supply chain performance, Industrial Management Perspective, 5(20) (2016).
4. R. Jonathan, J. Menger, Management Soft Modeling, Adel Azar and Ali Anvari, Negah Tehran Publishing, First Edition, (2013).
5. J. Mingers, Soft OR comes of age But not everywhere!, Omega The International Journal of Management Science, 39(6) (2011) 729-741.
6. P. Ahi, Y. Mohamad Jaber, C. Searcy, A comprehensive multidimensional framework for assessing the performance of sustainable supply chains, Applied Mathematical Modelling, 40(23) (2016)10153-10166.
7. C.M. Su, D.J. Horng, M.L. Tseng, A.S.F. Chiu, K.J. Wu, H.P. Chen, "Improving
8. Sustainable supply chain management using a novel hierarchical grey-DEMATEL approach" Journal of Cleaner Production, (2015) 1-13.
9. E. Soltani, J. Syed, Y. Liao, A. Iqbal, "Managerial Mindsets toward Corporate Social, (2015).
10. Responsibility The Case of Auto Industry in Iran", Journal of Business Ethics, 129(4) (2015) 795-

810.
11. Khakbazan, Ehsan, Four Souqi, Seyyed Kamal, Rafiei's addressee, Farimah, "An Integrated Value-Based Supply Chain Modeling Offering by Considering Financial Ratios in Financial Decisions", Journal of Modern Research in Decision Making, 3(1) (1397).
12. D.A. Wuttke, C. Blome, H. Sebastian, M. Protopappa Sieke, "Supply chain finance Optimal introduction and adoption decisions", International Journal of Production Economics, 178 (2016) 72–81.
13. B. Kardan, M.H. Vadie Noghabi, A. Rostami, Using fuzzy regression to explain the relationship between supply chain and financial performance, Industrial Management Perspective, 5(20) (2016) 119-141.
14. M.L. Tseng, K.J. Wu, J. Hu, C.H. Wang, Decision making model for sustainable supply chain finance under uncertainties International Journal of Production, Elsevier, (2018).
15. M. Abdel Basset, M. Gunasekaran, M. Mohamed, A framework for risk assessment, management and evaluation Economic tool for quantifying risks in supply chain Future Generation, Elsevier, (2019).
16. A. Mohammadi, Supply chain design and integration of financial and operational approaches, Industrial Management Perspective, 7(26) (2016).
17. M. Khalifeh, Designing Supply Chain of Manufacturing Companies with Operational and Financial Approach, PhD thesis, Shiraz University, (2017).
18. M. Kiani, A. Morovati, E. Moftehzadeh, F. Zamzam, Designing a dynamic model of factors affecting the success of green supply chain management, Bimonthly Journal of Business Studies, 20(112) (2022).
19. S. Azizi, Identifying and prioritizing factors affecting sustainable supply chain performance, Second International Conference on New Developments in Management, Economics, and Accounting, (1977).
20. F. Farrokhizadeh, H. Farrokhizadeh, Investigating and ranking the factors affecting green supply chain management in the petrochemical industry, Dimetal's approach (case study of Lorestan Petrochemical) - Publication The growth of technology, Period, 16(62) (2020) 51-59.
21. H. Shah Bandarzadeh, G. Jamali, F. Abadi, Designing a model to identify factors affecting supply chain performance evaluation with supply chain operational reference model approach, Second Internal Economic Management Accounting Conference, (2014).
22. Larry, Rubrich, Madelyn, Watson, Implementing World class manufacturing, Wcm associate, (2000).
23. S. Bell, S. Morse, How people use rich picture to help them think and act, In systematic practice and action research, 26(4) (2013) 331-348.
24. A. Azar, F. Khosravani, R. Jalali, Investigation into Soft Operations of Structural Problems Approach, Tehran, Industrial Management Organization Publishing, First Edition, (2013).
25. P. Checkland, J. Paulter, Learning to Act, MR Mehregan, Mahmoud Dehghan, Mohammad Reza Akhavan and Kamyar Raisifar, Tehran Publication of Mehraban, (2014).
26. A. Abadi, A. Azar, A. Alirezayi, G.H. Abaspoor, designing a world-class after-sales service model with a soft systems methodology approach, a case study of Iran's liquefied gas industry, Journal of Industrial Management Studies, 19(60) (2021).
27. Wu, Jei Zheng, Himadewi Santoso, Caroline, Roan, Jinshyang, " Key factors for truly sustainable supply chain management an investigation of the coal industry in Indonesia", International Journal of Logistics Management Journal and published by Emerald Publishing Limited, (2017).
28. Peter checkland system thinking, system practice, (2017).