Applied-Research Paper

# Designing a Model of Financial Flexibility Functions for Industrial Infrastructure Development of Abadan Oil Refining Company

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| ARTICLE INFO | ABSTRACT |
|---|---|
| | Financial flexibility plays a crucial role in enabling companies to maximize their expansion capabilities and adapt to unforeseen events and changes in a competitive market. The objective of this study was to design a model of financial flexibility for the development of industrial infrastructure in the Abadan Oil Refining Company. A synthetic and inductive-deductive approach was utilized, involving a panel of 12 financial management specialists and 18 managers and deputies from the company. The study employed Meta-synthesis and Delphi analysis to identify propositions regarding the functions of financial flexibility in industrial infrastructure development. Furthermore, Total Interpretive Structural Modeling was employed to determine the priority and effectiveness of these functions. The results revealed that the key factors contributing to financial flexibility in the Abadan Oil Refining Company were financial agility in industrial infrastructure development, the reduction of financial constraints in resource provision for infrastructure development, and the dynamic evaluation of infrastructure development plans. Notably, reducing financial constraints in resource provision emerged as a critical management function that enables companies to invest in industrial infrastructure without encountering financial limitations. The findings of this study shed light on the significance of financial flexibility in the context of industrial infrastructure development and provide a model that can be implemented in other companies to enhance their strategic development capacities. Moreover, the methodology employed in this study can be adopted in future research to explore various aspects of financial management and strategic planning across different industries. |

## 1 Introduction

Many organizations, both public and private, face strategic challenges in their operations that can impact their competitiveness and result in reduced customer satisfaction and partnerships [16]. In other words, any cohesive structure must establish goals and programs to elevate its values in alignment with the interests and desires of stakeholders. Achieving this objective necessitates flexibility, regardless of any capability. To prevent inefficiency and improve productivity across various dimensions of their structure, organizations need to redesign their strategies, including financial policies and strategies, to gain a better understanding of their environment and respond effectively [3]. Financial flexibility, indeed, is a pivotal aspect of financial management and investment that enhances managers' performance by enabling them to seize growth opportunities and facilitates the company's entry into

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new markets. Furthermore, recognizing financial flexibility serves as the basis for assessing a company's liquidity, as these criteria determine the business unit's ability to make payments to suppliers, raw material providers, and fulfill financial obligations such as investments and loan repayments [19].

The term "financial flexibility" can be defined as the ability of a firm to access and restructure its financing at a low cost, enabling it to respond effectively to unexpected cash flow or investment shocks. It encompasses the timely acquisition or adjustment of resources, seizing investment opportunities, providing resilience against unforeseen events, and contributing to maximizing the enterprise's value. Financial flexibility often entails sacrificing certain benefits to remove constraints and enhance a company's competitive operations in global markets. Generally, a business unit with greater financial flexibility is considered less risky. The foundation of financial flexibility lies within the composition of a company's capital structure. Mura and Marchica [23] argued that financial flexibility influences the capital structure and financing decisions of corporate executives. By increasing their ability to adapt to environmental changes, companies can maximize their value by having the necessary financial resources to respond appropriately to unforeseen events and circumstances.

The emphasis placed by researchers such as Booth et al. [6], Yung et al. [34], Rapp et al. [27], and Ang and Smedema [2] on the significance of financial flexibility stems from its potential to create a competitive advantage by enabling companies to provide financial resources in response to future opportunities. Theories suggest two policies through which financial flexibility can bring greater value to companies: firstly, by mitigating investment problems resulting from limited access to capital, and secondly, by facilitating the development of corporate financial infrastructure. Considering the second principle of financial flexibility approaches, this study aims to examine potential approaches to the functions of financial flexibility in the Abadan Oil Refining Company and identify the most effective basis for financial flexibility statements specific to the company. The company, in line with circulars such as Circular No.100/68118 dated 11/11/2012 entitled "Financial Discipline Instruction," Circular No. 20/2-393 dated 17/08/2019 entitled "Strengthening financial monitoring (control)," and Circular 120128/T57268 dated 19/12/2009, aims to save and exercise financial discipline in accordance with paragraph (16) of the general policies of the resistance economy and the Sixth Development Plans. These measures aim to reduce financial costs and promote investment in profitable projects for the development of industrial infrastructure in the Abadan Oil Refining Company.

This study seeks to understand the necessity of applying financial flexibility in the Abadan Oil Refining Company and, through the Total Interpretive and Structural Model (TISM), aims to gain more knowledge in this area by theoretically developing its functions in the industrial infrastructure of the company. Specifically, the study aims to determine the most effective propositions for the development of industrial infrastructure in the Abadan Oil Refining Company, considering the potential elements related to financial flexibility. Subsequently, by grasping the concept and content of the question, the second part of the study focuses on providing a theoretical explanation of the concepts related to financial flexibility, aiming to strengthen the foundation for future conclusions. In the third part, the research presents a coherent framework of methods and approaches for the analysis, outlining the methodology in line with its objectives. The fourth part examines these analytical approaches at the community level of interest, and finally, in the fifth part, the research discusses the obtained results and provides theoretical reasoning. Furthermore, the study acknowledges the limitations of the research and presents practical suggestions to conclude the study.

In summary, this study recognizes the importance of financial flexibility in organizations' strategic operations and its potential to enhance their competitiveness and value. By exploring the functions of financial flexibility in the context of the Abadan Oil Refining Company's industrial infrastructure development, this research aims to provide valuable insights and a theoretical model that can be applied in similar companies. The study's methodology, including Meta-synthesis, Delphi analysis, and Total

Interpretive Structural Modeling, contributes to the advancement of financial management and strategic planning research in various industries. It is important to note that the study acknowledges the specific context of the Abadan Oil Refining Company and its alignment with circulars and policies promoting financial discipline and investment in profitable projects. The research aims to uncover the most effective propositions for the company's industrial infrastructure development while considering the elements related to financial flexibility. By expanding our understanding of financial flexibility and its functions, this study contributes to the broader field of financial management and strategic decision-making. The findings and theoretical framework developed in this research can serve as a foundation for future studies and provide practical guidance for companies seeking to enhance their strategic development capacities through the implementation of financial flexibility. In conclusion, this study aims to shed light on the significance of financial flexibility in the context of industrial infrastructure development, provide a model tailored to the Abadan Oil Refining Company, and offer valuable insights for organizations in diverse industries. By investigating the functions of financial flexibility and utilizing advanced research methodologies, this study contributes to the understanding and application of financial management principles, ultimately assisting companies in achieving their strategic goals and responding effectively to dynamic market conditions.

## 2 Theoretical Basics
### 2.1 Definition of Financial Flexibility

In a general definition, financial flexibility refers to the ability of a company to achieve its financing restructuring at low cost [28]. On the other hand, financial flexibility can be defined as the capacity of companies in financing to respond appropriately to unforeseen events and cases [8]. In fact, financial flexibility adapts the company's capabilities to the processes and innovations related to the environment, and raise the level of effective capacity of the company to meet the needs and expectations of stakeholders [29]. According to the theoretical concepts of accounting standards, financial flexibility is the ability of an entity to take effective action to change the amount and timing of cash flows so that the entity can respond appropriately to unexpected events and opportunities. Also, financial flexibility will enable the business unit to take full advantage of unexpected investment opportunities, and continue to operate at a time when operating cash flows are low or negative due to an unexpected decline in demand for the unit's products. Volberda [33] defines financial flexibility as the ability to perform profitable activities following changes in the business environment, as well as the ability to anticipate changes that affect the firm's goals. According to him, financial flexibility includes the following two perspectives:

❖ **Internal financial flexibility**: such as the company's capacity to adapt to the needs of the environment
❖ **External financial flexibility:** such as the capacity of the company to influence the environment and ultimately reduce vulnerability.

According to Volberda, the main components of internal financial flexibility are debt capacity and cash held in the company. Determining the relationship between the components of companies' internal financial flexibility is very important; Because by specifying this issue, the manager of any company can, with the proper control and management of these components, consider maintaining the internal financial flexibility of the company as an important issue in the company and thus manage sudden crises and problems in the best possible way, And to take advantage of the investment opportunities that have arisen in a favorable way, which ultimately leads to an increase in the value of the company [25]. Creating internal and external flexibility and optimal balance between the two is of particular importance in the company.

## Expansion of Financial Flexibility in Industrial Infrastructure Development of Abadan Oil Refining Company

The concept of financial flexibility in companies of a general nature, such as the Abadan Oil Refining Company, must be understood in the specific context of their structures. Structures that include features; Public sector organizations focus on socio-political goals; Their use of independent accounts; The importance of adhering to the budget cycle; Specific operational complexities (which require a balance between conventional and quasi-legal valuations; fidelity and transparency; and specific managerial values such as efficiency and effectiveness) and, most importantly, a broad dimension of public accountability [17]. Under these circumstances, financial flexibility is an ongoing process that must be considered by management and decision-making mechanisms to reduce environmental risks and provide reasonable assurance for the development of investment plans and projects such as industrial infrastructure development [35]. The functions of financial flexibility based on the development of investment plans of companies with the mentioned characteristics can achieve the following goals:

- ➢ Creating a fit between the characteristics of financial development combined with the efficiency and effectiveness of the company's operations
- ➢ Taking responsibility for the company's accountability to stakeholders
- ➢ Observance of all applicable laws and regulations
- ➢ Protect resources from environmental change, damage and abuse

Flexibility goals in the public sector, such as the Abadan Oil Refining Company, are very different from the goals of flexibility in the for-profit private sector units in terms of basis and structural approaches. Based on the structural approaches of Abadan Refining Oil Company, these objectives can be divided into three general categories in the framework of Figure (1) as follows:



**Fig.1:** Financial Flexibility Functions for Industrial Infrastructure Development

Based on this framework, in describing the goals of financial flexibility in the development of the company's industrial infrastructure, the following can be stated:

- ❖ **Operational Goals:** These objectives examine the areas of the company's financial performance in order to use financial resources effectively and efficiently, and a balanced fit from budget plans to costs and financial structures of the company focuses on the necessary effectiveness in advancing the developed strategies.

- ❖ **Informational Goals:** Due to the nature of companies such as Abadan Oil Refining Company, company managers should be held accountable using the accounting system and through the preparation and publication of financial reports containing the necessary and sufficient in-

formation and disclosure of facts, accountability, and the citizenship rights of the rightful owners. The information provided to the right holders through financial reporting and accountability must be sufficiently reliable.

❖ **Monitoring Goals:** The establishment and management of public sector organizations such as the Abadan National Oil Refining Company is based on laws and regulations. All activities of the company should be carried out in accordance with the laws and regulations, and the elected and appointed officials of such organizations, in the correct implementation of laws and regulations, should be responsible for advancing the supervisory goals [4].

According to the theoretical foundations, in this section, research questions in line with the research analysis process are presented in the following order to be a basis for analysis:

1. The first research question) what are the components of financial flexibility functions for the development of industrial infrastructure?

2. Second research question) what are the propositions of financial flexibility functions for the development of industrial infrastructure?

3. Third research question) what are the most effective propositions of financial flexibility functions for the development of industrial infrastructure in Abadan Oil Refining Company?
   It is necessary to explain that the qualitative analysis process is used to answer the first two questions of the research and the quantitative analysis process is used to answer the third research question.

## 2.2 Literature Review

Nawanir et al. [24] conducted a study entitled "Syntax analysis of production time reduction functions for industrial flexibility". 160 large manufacturers and industrial customizers in Indonesia participated in this study, and data were analyzed using PLS partial least squares analysis and multi-group analysis. The results in the analysis of synergistic criteria of production reduction functions included criteria such as technology management of companies and the use of machines to update and assess the level of depreciation, which had a direct and positive effect on the flexibility of the industries under study. In other words, companies that had a higher level of synergy in terms of balance between components of production time reduction functions, had greater flexibility in production and higher profitability than other companies. Radnejad et al. [26] conducted a study entitled "Barriers to Innovation in the Development of Environmental Technologies in the Oil Industry". This research was qualitative methodology and based on theoretical analysis of data foundation.

In this study, 14 semi-structured interviews were used. The results of the study indicated the existence of five groups of innovation challenges as obstacles in the development of environmental technologies in the oil industry, which include: (1) challenges in resource mobilization; (2) challenges in corporate strategies; (3) challenges in innovation leadership; (4) The challenges were in managing shareholder expectations and (5) the challenges were in reducing production costs. Chester and Allenby [10] conducted a study entitled "Adapting the Infrastructure of Flexibility and Agility in Industrial Companies." In this study, which was conducted based on a qualitative approach, criteria for flexibility and agility of industrial companies were determined based on theoretical screening of the content of similar research. And then in the form of an interpretive prioritization analysis, it was found that the most effective measure of flexibility and agility in industrial companies, respectively, financial structures; Technology and information technology and production management practices. Dadashzadeh and Hejazi [12] conducted a study entitled "The value of financial flexibility, investment efficiency and the speed of adjustment of working capital." The statistical population of the study is the companies listed on the Tehran Stock Exchange. Based on the systematic elimination sampling method, 118 companies have been selected as a statistical sample during the years 2010 to 2016. The results show

that there is a positive and significant relationship between the value of financial flexibility with the efficiency of investment in net working capital and the speed of adjustment of working capital and companies pay attention to the level of financial flexibility in their decisions about optimizing investment and working capital policy, which in the long run can lead to empowering the value of financial flexibility and making profitable investment opportunities more efficient for companies. The relationship between the value of financial flexibility and the speed of adjustment of working capital is higher in companies that are more financially constrained, and this relationship is lower in companies without financial constraints and there is no nonlinear (U-shaped) relationship between working capital and firm performance.

Bandarian [5] conducted a study entitled Technological Reconstruction of Iran's Oil Refining Industry, providing technological solutions for competitiveness. In this study, taking into account the technological developments in the energy industry, solutions to recreate the Iranian refining industry have been proposed. The two main axes of regeneration of Iran's oil refining industry are: 1. Reducing the production residues of refineries and turning them into inter-distillation products; 2. Reducing the level of residual sulfur produced by refineries; As a result, cost-effective residue upgrade technologies (slurry bed hydrocracking) with delayed coking will be the main option for re-creating the refining industry. Due to the unavailability of slurry bed hydrocracking technologies, this solution can be implemented by combining two delay coking technologies and fixed bed hydrocracking technology (ISOMAX) available in Iranian oil refineries; Therefore, the simultaneous use of two technologies of delayed coking and fixed bed hydrocracking is a suitable combination that can be implemented to improve the performance.

## 3 Methodology

Based on the methodological classification of each research according to the result; goals and type of data, this research is considered as part of development research as a result, because the concepts related to financial flexibility functions for the development of industrial infrastructure, theoretically do not have a coherent framework in the public sector, and since this research seeks to develop the theoretical basis of this concept in Abadan Oil Refining Company, it is considered a development from this perspective. Also, based on the purpose, this research is among the descriptive researches with the aim of explaining the desired phenomenon in financial flexibility for the development of industrial infrastructures. Finally, in terms of logic, data collection is inductive-deductive, because in the qualitative part, first, relying on the inductive approach of the theoretical foundations of the propositions, the propositions in financial flexibility for the development of industrial infrastructure are analyzed, and then, based on induction, the contents of the propositions identified in the target community, ie the managers and deputies, of Abadan Oil Refining Company are explained.

In this research, which is a combined research, meta-synthesis is used in the qualitative part. Meta-synthesis includes steps to reach components and propositions that perhaps the most important way to do is process steps, which range from recognizing the root cause of the problem in the form of research question formulation, to presenting a specific model based on identifying the contents of a statement from the results of previous research based on the participation of panel members. Then, based on Delphi analysis, in order to determine the theoretical adequacy according to the two criteria of mean and coefficient of agreement, an attempt is made to confirm the propositions in terms of theoretical adequacy. Finally, in a quantitative part, through the analysis of a comprehensive interpretive and structured model, the identified layers are explained in the form of a prioritization model in terms of influence and effectiveness.

## 3.1 Statistical Population and Research Sampling Method

Based on the nature of the research, which is hybrid, the target population in the qualitative section includes the relevant research on the research topic and 12 financial management specialists at the university and company level who identify the content propositions of the research based on the process of meta-combination, critical evaluation and Delphi analysis. In order to select these individuals, a homogeneous qualitative sampling method in the form of panel group members has been used. In this sampling method, the researcher selects his samples with the aim of gaining deep, focused and detailed knowledge from among those who have experienced this phenomenon and can provide a lot of information to the researcher.

However, the target population was a small number of 18 managers and deputies of Abadan Oil Refining Company, which is acceptable from the statistical population due to the need to analyze a comprehensive interpretive and structured model, while having the necessary experimental and scientific conditions. Because the purpose of the participation of this community is to explain the results of the quality sector in Abadan Oil Refining Company. In fact, since this method is an analysis based on the analysis of complex systems at certain levels and must be done by participants based on a specific criterion such as experience or expertise, usually a cross-matrix questionnaire with 15 to 30 participants.

## 4 Findings
## 4.1 Meta-Synthesis and Delphi Findings

In order to perform Meta-synthesis, databases and research references were used first. To this end, and relying on the process of Meta-synthesis and Delphi analysis, this research in this section seeks to analyze the content of propositions related to financial flexibility for the development of industrial infrastructure. Based on this, first, similar researches related to the research subject are extracted through the following databases and research references.

**Table 1:** Databases and Official Research References

| Foreign databases | Internal databases |
|---|---|
| Sciencedirect | MAGIRAN |
| Emeraldinsight | NOORSOFR |
| OnlineLierary | SID |
| Aaajournals | All related scientific and research publications |

A number of valid and reliable researches in the period of 2017 to 2021 were identified according to the protocol and the process of overestimation evaluation. In other words, in order to find similar articles and researches and using the above research bases and references, the researches related to the research goal were identified.
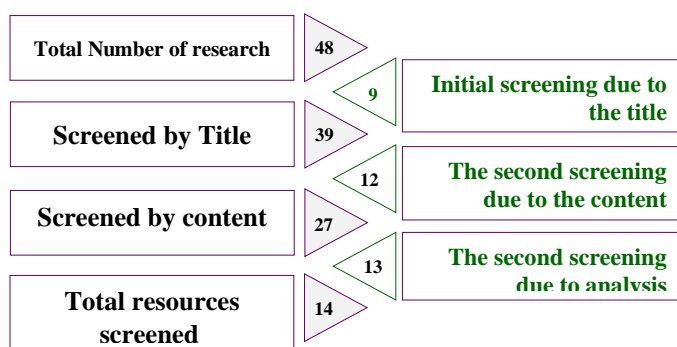


**Fig. 2:** Screening Analysis Process of Research Appropriate to the Purpose of the Research to Identify Topics

Based on the results of this analysis, it was found that 5 studies that did not obtain the required score (more than 30 points) were excluded from the review. In order to determine the themes of financial flexibility statements for the development of industrial infrastructure, the following scoring method is used. Based on this method, all sub-criteria extracted from the text of approved articles are written in the column of the table and then in the row of each table, the names of the approved research researchers are given. Based on each researcher's use of the sub-criteria written in the table column, the symbol "☑" is inserted, then the scores of each ☑ are added together in the sub-criteria column, and scores above the average of the researches are selected as research components.

**Table 2:** Evaluation Process of Approved Research to Determine Propositional Content

| Critical Appraisal Program | International research | | | | | | | | | Internal research | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | Do & Mai (2021)[14] | Al-Mana et al (2020)[1] | Umar et al (2020)[32] | Chang & Ma (2019)[9] | Lin & Chen (2019)[20] | Moraes Carvalho et al (2018)[22] | Mancini & Jose Paz (2018)[21] | Bouranta & Psomas (2017)[7] | Corato et al (2017)[11] | Derakhshani Darabi and Mohantfar (2021)[13] | Emami Meybodi (2020)[15] | Shirmardi Ahmadabad (2020)[31] | Khaleghi Moghadam et al. (2020)[18] | Shirijian et al. (2018)[30] |
| Research Purpose | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 4 | 2 | 3 | 3 | 2 | 3 | 2 |
| The logic of Research Method | 3 | 4 | 3 | 1 | 4 | 2 | 3 | 3 | 3 | 4 | 5 | 3 | 3 | 2 |
| Research Plan | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 4 | 2 | 3 | 4 | 3 | 4 | 2 |
| Sampling | 3 | 3 | 3 | 2 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 |
| Collecting Data | 5 | 4 | 4 | 3 | 4 | 3 | 3 | 4 | 2 | 3 | 4 | 3 | 2 | 2 |
| Reflection | 4 | 3 | 3 | 2 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 2 | 3 | 1 |
| Ethical Considerations | 3 | 3 | 3 | 3 | 4 | 2 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 |
| Accuracy of Analysis | 4 | 3 | 3 | 2 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 2 |
| Theoretical and Clear Expression of Findings | 5 | 4 | 3 | 2 | 4 | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 2 |
| The Value of Research | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 3 | 2 |
| **Total** | 38 | 35 | 33 | 23 | 36 | 27 | 34 | 37 | 27 | 31 | 36 | 28 | 30 | 20 |

**Table 3:** Analysis of the Main Themes of Financial Flexibility Propositions for The Development of Industrial Infrastructure

| Research status | Researchers | Operational functions | Structural functions | Managerial functions | Environmental functions | Competitive functions | Supervisory functions |
|---|---|---|---|---|---|---|---|
| International | Do & Mai (2021)[14] | ☑ | ☑ | - | - | ☑ | - |
| | Al-Mana et al (2020)[1] | ☑ | - | ☑ | - | - | ☑ |
| | Umar et al (2020)[32] | - | - | ☑ | ☑ | - | ☑ |
| | Chang & Ma (2019)[9] | ☑ | - | - | - | ☑ | - |
| | Mancini & Jose Paz (2018)[21] | ☑ | ☑ | - | - | ☑ | - |
| | Bouranta & Psomas (2017)[7] | - | - | ☑ | ☑ | - | - |
| Internal | Derakhshani Darabi and Mohantfar (2021)[13] | ☑ | - | - | - | ☑ | - |
| | Emami Meybodi (2020)[15] | - | - | ☑ | ☑ | ☑ | - |
| | Khaleghi Moghadam et al. (2020)[18] | ☑ | - | ☑ | ☑ | - | - |
| **Total** | | 6 | 2 | 5 | 4 | 5 | 2 |

According to the approval of 9 researches in the critical evaluation process, the main components that have obtained more than half of the approved researches are approved as the main themes in determining the research propositions. In this section, after analyzing the theoretical foundations of the approved researches and confirming the three main themes, the contents of the research propositions have been determined according to Table 4.

**Table 4:** Themes of Financial Flexibility Statements for Industrial Infrastructure Development

| The main components | Statements | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| **Operational functions** | Financial agility in the development of industrial infrastructure | | | | | | | |
| | The dynamics of evaluating industrial infrastructure development plans by estimating a positive net present value | | | | | | | |
| | Dynamics of financial ratios for investing in machinery | | | | | | | |
| | Reduce operating costs by reducing depreciation | | | | | | | |
| | Controlling changes in the company's financial costs to succeed in developing industrial infrastructure | | | | | | | |
| | Increase the accuracy of profit forecasting from the place of increasing trading volume | | | | | | | |
| | Increasing the effectiveness of the debt-to-assets ratio in the face of a sanctioned economy | | | | | | | |
| | Cash flow to provide credit for infrastructure development | | | | | | | |
| **Managerial functions** | Reducing financial constraints on the provision of resources for the development of industrial infrastructure | | | | | | | |
| | Reduce the hierarchy of financial structures to expose transparent financial reporting | | | | | | | |
| | Reducing information asymmetry as a basis for accurately assessing infrastructure development costs | | | | | | | |
| | Strategic planning to attract foreign investment | | | | | | | |
| | Allocation of resource credit dynamics for the modernization of industrial infrastructure | | | | | | | |
| | Improving the effectiveness of budgeting in estimating financial performance | | | | | | | |
| | Creating IT capabilities in financial decision making | | | | | | | |
| | Flexibility in the face of environmental changes such as laws and sanctions | | | | | | | |
| **Competitive functions** | Formulation of financial strategies in accordance with the investment development functions of the company | | | | | | | |
| | Identify opportunities and environmental threats in the field of industrial infrastructure | | | | | | | |
| | Developing business with other companies such as mergers or consortia | | | | | | | |
| | Recognize fluctuations in liquidity absorption at the market level | | | | | | | |
| | Improving the level of forecasts of macroeconomic variables | | | | | | | |
| | Development of economic diplomacy to access free financial resources for the development of industrial infrastructure | | | | | | | |
| | Assess the impact of international sanctions on the development of industrial infrastructure | | | | | | | |
| | Reduce the cost of industrial infrastructure development through outsourcing | | | | | | | |

Then, in order to ensure the identified components and propositions, Delphi analysis was used to reach the theoretical saturation point. For this purpose, these statements were provided to experts for a survey in the form of a checklist of 7 options, which Table 5 shows the results of Delphi analysis.

Based on the Delphi analysis, it was determined in two rounds that 4 propositional themes were removed, because considering that according to the Likert scale, 7 options obtained an average below 5 and their agreement coefficient was below 0.5, they were removed on this basis.

**Table 5:** the process of the First and Second Steps of Delphi Analysis

| The main components | Statements | The first round of Delphi | | The second round of Delphi | | Result |
|---|---|---|---|---|---|---|
| | | Average | Coefficient of agreement | Average | Coefficient of agreement | |
| Operational functions | Financial agility in the development of industrial infrastructure | 5 | 0/50 | 5/10 | 0/55 | Confirmation |
| | Dynamics of evaluation of industrial infrastructure development plans | 5/20 | 0/60 | 5/30 | 0/65 | Confirmation |
| | Reduce operating costs by reducing depreciation | 5/30 | 0/65 | 5/50 | 0/75 | Confirmation |
| | Dynamics of financial ratios for investing in machinery | 5/20 | 0/60 | 5/30 | 0/65 | Confirmation |
| | Cash flow to provide credit for infrastructure development | 6 | 0/80 | 6/20 | 0/85 | Confirmation |
| | **Control changes in financial costs** | 4 | 0/35 | **Delete** | | |
| | **Increase the effectiveness of the debt-to-assets ratio** | 3 | 0/20 | **Delete** | | |
| | Increase the accuracy of profit forecasting from the place of increasing trading volume | 5/50 | 0/75 | 6/10 | 0/82 | Confirmation |
| Managerial functions | Reducing financial constraints on the provision of resources for the development of industrial infrastructure | 5/20 | 0/65 | 5/50 | 0/75 | Confirmation |
| | Reduce the hierarchy of financial structures to expose transparent financial reporting | 5 | 0/50 | 5/10 | 0/55 | Confirmation |
| | Reducing information asymmetry as a basis for accurately assessing infrastructure development costs | 5/50 | 0/75 | 6/10 | 0/82 | Confirmation |
| | Strategic planning to attract foreign investment | 5/50 | 0/75 | 6/10 | 0/82 | Confirmation |
| | Allocation of resource credit dynamics for the modernization of industrial infrastructure | 6 | 0/80 | 6/20 | 0/85 | Confirmation |
| | **Improving the effectiveness of budgeting in estimating financial performance** | 4 | 0/35 | **Delete** | | |
| | Creating IT capabilities in financial decision making | 5/30 | 0/65 | 5/50 | 0/75 | Confirmation |
| | Flexibility in the face of environmental changes such as laws and sanctions | 5/20 | 0/65 | 5/50 | 0/75 | Confirmation |
| Competitive functions | Formulation of financial strategies in accordance with the investment development functions of the company | 5/50 | 0/75 | 6/10 | 0/82 | Confirmation |
| | **Assess the impact of international sanctions on the development of industrial infrastructure** | 4 | 0/35 | **Delete** | | |
| | Identify opportunities and environmental threats in the field of industrial infrastructure | 5 | 0/50 | 5/10 | 0/55 | Confirmation |
| | Identify opportunities and environmental threats in the field of industrial infrastructure | 5/20 | 0/65 | 5/50 | 0/75 | Confirmation |
| | Recognize fluctuations in liquidity absorption at the market level | 5/20 | 0/65 | 5/50 | 0/75 | Confirmation |
| | Improving the level of forecasts of macroeconomic variables | 5/50 | 0/75 | 6/10 | 0/82 | Confirmation |
| | Economic diplomacy to access free financial resources for the development of industrial infrastructure | 5/30 | 0/65 | 5/50 | 0/75 | Confirmation |
| | Reduce the cost of industrial infrastructure development through outsourcing | 6 | 0/80 | 6/20 | 0/85 | Confirmation |

Based on this, a total of 20 themes of financial flexibility statements were approved for the development of industrial infrastructure that based on the proposed propositions, the conceptual framework of financial flexibility themes for the development of industrial infrastructure is first presented in the

following order, and in the next step, they enter the phase of comprehensive interpretive / structural analysis.

## 4.2 Findings of Analysis of Comprehensive Interpretive and Structural Model

After reaching the theoretical adequacy of the themes of financial flexibility statements for the development of industrial infrastructure after the second round of Delphi approval, in order to conduct a comprehensive interpretive and structured analysis of the research, panel members are asked to analyze matrix questionnaires based on the explanations of this analysis. In order to start this analysis, it is necessary to encode the confirmed statements from the Delphi analysis stage. In this section, it is necessary to first sort the propositions randomly and then codify them so that the level of the matrix statements is done in a specialized way.
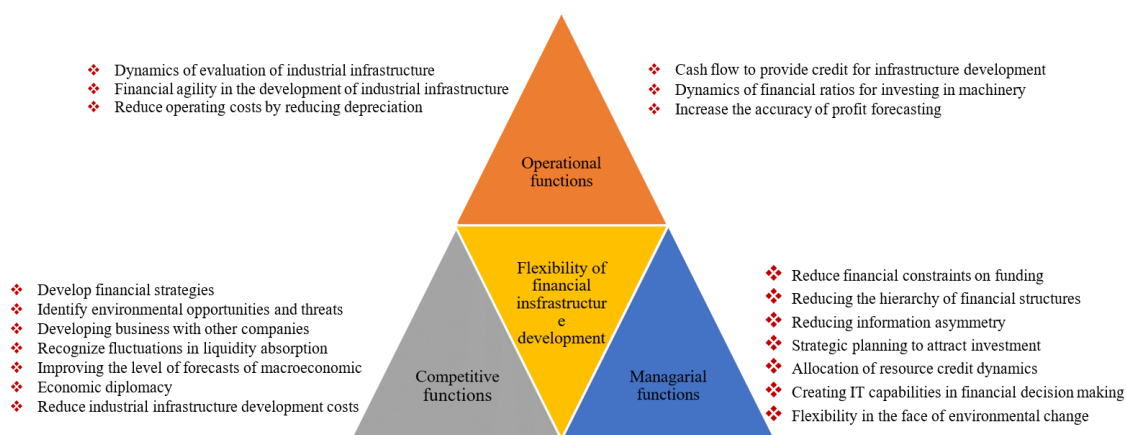


**Fig.3:** Theoretical Framework of Research Based on Determining the Components and Propositions of the Research Goal

**Table 6:** Abbreviation of Approved Propositions

| Abbreviation | Statement | Abbreviation | Statement |
|---|---|---|---|
| P11 | Allocation of resource credit dynamics for the modernization of industrial infrastructure | P1 | Creating IT capabilities in financial decision making |
| P12 | Financial agility in the development of industrial infrastructure | P2 | Improving the level of forecasts of macroeconomic variables |
| P13 | Flexibility in the face of environmental changes such as laws and sanctions | P3 | Reduce operating costs by reducing depreciation |
| P14 | Formulation of financial strategies in accordance with the investment development functions of the company | P4 | Dynamics of financial ratios for investing in machinery |
| P15 | Identify opportunities and environmental threats in the field of industrial infrastructure | P5 | Cash flow to provide credit for infrastructure development |
| P16 | Developing business with other companies such as mergers or consortia | P6 | Increase the accuracy of profit forecasting from the place of increasing trading volume |
| P17 | Reducing financial constraints on the provision of resources for the development of industrial infrastructure | P7 | Recognize fluctuations in liquidity absorption at the market level |
| P18 | Dynamics of evaluation of industrial infrastructure development plans | P8 | Reduce the hierarchy of financial structures to expose transparent financial reporting |
| P19 | Economic diplomacy to access free financial resources for the development of industrial infrastructure | P9 | Reducing information asymmetry as a basis for accurately assessing infrastructure development costs |
| P20 | Reduce the cost of industrial infrastructure development through outsourcing | P10 | Strategic planning to attract foreign investment |

As can be seen in Table 6, the contents of the statements confirmed by the experts are defined in the form of acronyms to form their own structural interaction matrix. At this stage, the opinions of 18 managers and deputies of Abadan Oil Refining Company about the relationship between the propositions are first compared. For this purpose, the "mode" proposition is used in such a way that among

the four possible relations between the propositions, the relation that has the most frequency in the opinion of experts will be considered in the final table.

After comparing the pairs of rows and columns of the research propositions, the achievement matrix is formed. In other words, in this step, the symbols of the structural matrix relations to the numbers zero and one can be formed according to Table 7. Once formed, this matrix is used to examine other dimensions of indirect relationships between propositions, which is the advantage of analyzing the Total Comprehensive Interpretive and Structural Model (TISM) over Interpretive / Structural Model (ISM). In other words, in order to improve interpretive structural analysis to comprehensive interpretive structural analysis, any pairwise comparison must be fully interpreted by answering the interpretive question mentioned in the previous step. For pairwise comparisons, the nth proposition is compared in pairs with all elements from $(i + 1)$ to nth. For each connection, the answer is "Y" or "N" and if the answer is yes, the reason is stated. But if the answer is "N", participants should comment on the pair of variables.

**Table 7:** Achievement Matrix Formation

|      | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | P12 | P13 | P14 | P15 | P16 | P17 | P18 | P19 | P20 |
|------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| P1   | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   |
| P2   | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   |
| P3   | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 1   | 1   |
| P4   | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 0   | 1   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 1   |
| P5   | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| P6   | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| P7   | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 0  | 0  | 0   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 1   | 1   |
| P8   | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 0   | 1   | 0   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 0   |
| P9   | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   |
| P10  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| P11  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| P12  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 0   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 1   |
| P13  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1   | 0   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 0   |
| P14  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 0   |
| P15  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   |
| P16  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1   | 0   | 1   | 1   | 1   | 1   | 0   | 0   | 0   | 0   |
| P17  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 1   |
| P18  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   |
| P19  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 1   | 1   |
| P20  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1   | 1   | 0   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 1   |

In order to form the structural self-interaction matrix "SSIM", pairwise comparisons of financial flexibility propositions for the development of industrial infrastructure in Abadan Oil Refining Company are presented in Table 9. For pairwise comparisons, the first proposition was compared in pairs with all elements from $(i + 1)$ to nth. For each connection, the answer is yes "Y" or "N" and if the answer is yes, the reason is stated. In this case, the interpretive logic of pair relationships is presented in the form of the scientific basis of interpretive logic. In this step, the relations are entered as access matrices in the form of "1*" or "0", which are presented in Table 8. According to Table 8, cells with option "Y" are numbered 1 and cells with option "N" are numbered 0. In fact, this matrix is obtained by converting its structural interaction matrix into a zero and one binary matrix.

As can be seen in the table above, the conceptual symbols assigned according to the fashion proposition have been converted to 0, 1, and * 1 points according to the definition of the conceptual relationship to the numbers according to the previous table. In the following table, specify the penetration power (1 point obtained from the row) and the dependency power (1 point obtained from the column):

Next, in order to determine the relationships between propositions, we must first identify the output set, the input set, and the Intersection. The scoring level and priority of the variables are determined by the achievement set and the prerequisite set for each variable. The access set of each variable includes the variables that can be reached through this variable and the prerequisite set includes the variables according to which this variable can be reached. Then the subscriptions of the achievement set and the prerequisites of all factors are determined and if the access set is the same as the subscription set of that factor (factors) is considered as the priority level.

The surface refers to the designed layers of the final model. To obtain other levels, the previous levels must be separated from the matrix and the process repeated. After determining the levels again, arrange the received matrix in order of levels, the new matrix is called a conical matrix. In this step, using the final access matrix, the output and input sets for each variable are obtained.

**Table 8:** Comparison of Pairs Between Propositional Themes Based on Matrix Form

| Number | Couple comparison | Yes/No | Description of how to impact |
|---|---|---|---|
| ■ P1 **Financial agility in the development of industrial infrastructure** | | | |
| 1 | P1 − P2 | Yes ☒  NO ☐ | Financial agility is the basis for evaluating the desirability of industrial infrastructure development plans |
| 2 | P2 − P1 | Yes ☐  NO ☒ | |
| 3 | P1 − P3 | Yes ☒  NO ☐ | Financial agility is the basis for reducing operating costs through the assessment of depreciation reduction estimates |
| 4 | P3 − P1 | Yes ☐  NO ☒ | |
| 5 | P1 − P4 | Yes ☐  NO ☒ | |
| 6 | P4 − P1 | Yes ☐  NO ☒ | |
| 7 | P1 − P5 | Yes ☒  NO ☐ | |
| 8 | P5 − P1 | Yes ☐  NO ☒ | |
| 9 | P1 − P6 | Yes ☐  NO ☒ | |
| 10 | P6 − P1 | Yes ☒  NO ☐ | |
| 11 | P1 − P7 | Yes ☐  NO ☒ | Financial agility is the basis for reducing financial constraints on the provision of resources for the development of industrial infrastructure |
| 12 | P7 − P1 | Yes ☐  NO ☒ | |
| 13 | P1 − P8 | Yes ☐  NO ☒ | |
| 14 | P8 − P1 | Yes ☒  NO ☐ | Reducing the hierarchy of financial structures is the basis for financial agility in the development of industrial infrastructure |
| 15 | P1 − P9 | Yes ☒  NO ☐ | Financial agility is the basis for reducing information asymmetry as a basis for accurately assessing infrastructure development costs. |
| 16 | P9 − P1 | Yes ☐  NO ☒ | |
| 17 | P1 − P10 | Yes ☐  NO ☒ | |
| 18 | P10 − P1 | Yes ☐  NO ☒ | |
| 19 | P1 − P11 | Yes ☒  NO ☐ | Financial agility is the basis for allocating resource credit dynamics to modernize industrial infrastructure |
| 20 | P11 − P1 | Yes ☐  NO ☒ | |
| 21 | P1 − P12 | Yes ☐  NO ☒ | |
| 22 | P12 − P1 | Yes ☐  NO ☒ | |
| 23 | P1 − P13 | Yes ☐  NO ☒ | |
| 24 | P13 − P1 | Yes ☒  NO ☐ | Flexibility in the face of environmental change is the basis for financial agility in the development of industrial infrastructure |
| 25 | P1 − P14 | Yes ☐  NO ☒ | |
| 26 | P14 − P1 | Yes ☒  NO ☐ | Develop financial strategies as a basis for financial agility in the development of industrial infrastructure |
| 27 | P1 − P15 | Yes ☐  NO ☒ | |
| 28 | P15 − P1 | Yes ☐  NO ☒ | |
| 29 | P1 − P16 | Yes ☐  NO ☒ | |
| 30 | P16 − P1 | Yes ☐  NO ☒ | |
| 31 | P1 − P17 | Yes ☐  NO ☒ | |
| 32 | P17 − P1 | Yes ☐  NO ☒ | |
| 33 | P1 − P18 | Yes ☐  NO ☒ | |
| 34 | P18 − P1 | Yes ☐  NO ☒ | |
| 35 | P1 − P19 | Yes ☐  NO ☒ | |
| 36 | P19 − P1 | Yes ☐  NO ☒ | |
| 37 | P1 − P20 | Yes ☐  NO ☒ | |
| 38 | P21 − P1 | Yes ☐  NO ☒ | |

The output and input sets for a variable are defined as follows. The output set for a particular dimension / component is the variable itself, along with other variables that are affected by it, in other words, the variables that can be reached through this variable. The input set for each variable includes the variable itself as well as other variables that affect it, and finally the Intersection refer to the common dimensions of the output set and input of variables in the analysis of the comprehensive interpretive and structural model as a high-level variable, in other words, these variables are not effective in creating any other variable. After determining the output elements, input elements and Intersection, the proposition that the output elements and Intersection have the same, are determined as the first level and the least effective themes of financial flexibility propositions for the development of industrial infrastructure in Abadan Oil Refining Company.

**Table 9:** The Achievement Matrix in Terms of the Degree of Transferability of the Relationship Between Propositional Themes

|    | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | P12 | P13 | P14 | P15 | P16 | P17 | P18 | P19 | P20 |
|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| P1 | 1 | 1 | 0 | 0 | 1* | 1* | 0 | 0 | 0 | 1* | 1 | 1 | 1* | 1* | 1 | 1 | 0 | 0 | 0 | 0 |
| P2 | 1 | 1 | 0 | 0 | 1* | 1* | 0 | 0 | 0 | 1* | 1 | 1 | 1* | 1* | 1 | 1 | 0 | 0 | 0 | 0 |
| P3 | 1* | 1* | 1 | 1 | 1* | 1* | 1 | 1 | 1 | 1* | 1 | 1* | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| P4 | 1 | 1 | 1 | 1 | 1* | 1* | 1 | 1 | 1 | 1* | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| P5 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P6 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P7 | 1* | 1* | 1* | 1 | 1 | 1 | 1 | 1* | 1* | 1* | 1 | 1* | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| P8 | 1 | 1 | 0 | 0 | 1* | 1* | 0 | 1 | 1 | 1* | 1 | 1 | 1 | 1* | 1* | 1 | 0 | 0 | 0 | 0 |
| P9 | 1 | 1 | 0 | 0 | 1* | 1* | 0 | 1 | 1 | 1* | 1 | 1 | 1* | 1* | 1* | 1 | 0 | 0 | 0 | 0 |
| P10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P11 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P12 | 1 | 1 | 1 | 1 | 1* | 1* | 1 | 1 | 1 | 1* | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| P13 | 0 | 0 | 0 | 0 | 1* | 1* | 0 | 0 | 0 | 1* | 1 | 0 | 1 | 1* | 1* | 1 | 0 | 0 | 0 | 0 |
| P14 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1* | 1 | 0 | 1* | 1 | 1* | 1 | 0 | 0 | 0 | 0 |
| P15 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1* | 1 | 0 | 1* | 1* | 1 | 1 | 0 | 0 | 0 | 0 |
| P16 | 0 | 0 | 0 | 0 | 1* | 1* | 0 | 0 | 0 | 1* | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| P17 | 1 | 1 | 1 | 1 | 1* | 1* | 1 | 1 | 1 | 1* | 1 | 1 | 1 | 1* | 1* | 1 | 1 | 1* | 1* | 1 |
| P18 | 1 | 1 | 1 | 1 | 1* | 1* | 1 | 1 | 1 | 1* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1* | 1 |
| P19 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1* | 1* | 0 | 0 | 1 | 1 |
| P20 | 0 | 1 | 0 | 0 | 1* | 1* | 0 | 1 | 1* | 1 | 1 | 1 | 1 | 1* | 1* | 1 | 0 | 0 | 1* | 1 |

**Table10:** Separation of Influence and Dependence

| Criteria | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | P12 | P13 | P14 | P15 | P16 | P17 | P18 | P19 | P20 |
|----------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Influence | 11 | 11 | 17 | 17 | 3 | 3 | 16 | 13 | 13 | 2 | 4 | 19 | 8 | 8 | 8 | 8 | 20 | 20 | 11 | 14 |
| The power of dependence | 11 | 11 | 6 | 6 | 18 | 19 | 6 | 10 | 10 | 17 | 20 | 11 | 14 | 14 | 16 | 15 | 3 | 3 | 8 | 8 |

After determining this level, ie the least effective themes of financial flexibility propositions for the development of industrial infrastructure in Abadan Oil Refining Company, we remove that proposition and examine the same propositions of input and Intersection, and select it as the next level. This operation is repeated until the components of all levels of the system are identified.

As can be seen in Table 11, the contents of the cash flow statement statements to provide credit for infrastructure development (P5); increasing the accuracy of profit forecasting from the place of increasing trading volume (P6); Strategic planning to attract foreign investment (P10), and the allocation of resource credit dynamics for the modernization of industrial infrastructure (P11) based on the commonality of output propositions and equal elements, was determined as the first level proposition, ie the least effective themes of the financial flexibility propositions. And the statements of financial agility in the development of industrial infrastructure (P12); Reduction of financial constraints in providing resources for the development

of industrial infrastructure (P17) and the dynamics of evaluation of industrial infrastructure development plans (P18) were selected as the last level of the most effective reasons for financial flexibility for the development of industrial infrastructure in Abadan Oil Refining Company.

**Table 11:** Set of Output, Input and Intersection of Propositional Statements

| Factor code | Reachability set | Antecedent set | Intersection | Level | |
|---|---|---|---|---|---|
| P1 | 1,2,5,6,10,11,13,14,15,16 | 1,2,3,4,7,8,9,12,17,18,19 | 1,2 | III | third |
| P2 | 1,2,5,6,10,11,13,14,15,16 | 1,2,3,4,7,8,9,12,17,18,20 | 1,2 | III | |
| P3 | 1,2,3,4,5,6,7,8,9,10,11,13,15,16,19,20 | 3,4,7,12,17,18 | 3,4,7 | VI | sixth |
| P4 | 1,2,3,4,5,6,7,8,9,10,11,13,15,16,19,20 | 3,4,7,12,17,18 | 3,4,7 | VI | |
| P5 | 5,6,11 | 1,2,3,4,5,6,7,8,9,11,12,13,14,15,16,17,18,20 | 5,6,11 | I | first |
| P6 | 5,6,11 | 1,2,3,4,5,6,7,8,9,11,12,13,14,15,16,17,18,19,20 | 5,6,11 | I | |
| P7 | 1,2,3,4,5,6,7,8,9,10,11,14,15,16,19,20 | 3,4,7,12,17,18 | 3,4,7 | VI | sixth |
| P8 | 1,2,5,6,8,9,10,11,13,14,15,16 | 3,4,7,8,9,12,17,18,19,20 | 8,9 | IV | forth |
| P9 | 1,2,5,6,8,9,10,11,13,14,15,16 | 3,4,7,8,9,12,17,18,19,20 | 8,9 | IV | |
| P10 | 10,11 | 1,2,3,4,7,8,9,10,11,12,13,14,15,16,17,18,20 | 10,11 | I | first |
| P11 | 5,6,10,11 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20 | 5,6,10,11 | I | |
| P12 | 1,2,3,4,5,6,7,8,9,10,11,12,13,15,16,17,18,19,20 | 12,17,18 | 12,17,18 | VII | seventh |
| P13 | 5,6,10,11,13,14,15,16 | 1,2,3,8,9,12,13,14,15,16,17,18,19,20 | 13,14,15,16 | II | second |
| P14 | 5,6,10,11,13,14,15,16 | 1,2,4,7,8,9,13,14,15,16,17,18,19,20 | 13,14,15,16 | II | |
| P15 | 5,6,10,11,13,14,15,16 | 1,2,3,4,7,8,9,12,13,14,15,16,17,18,19,20 | 13,14,15,16 | II | |
| P16 | 5,6,10,11,13,14,15,16 | 1,2,3,4,8,9,12,13,14,15,16,17,18,19,20 | 13,14,15,16 | II | |
| P17 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20 | 12,17,18 | 12,17,18 | VII | seventh |
| P18 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20 | 12,17,18 | 12,17,18 | VII | |
| P19 | 1,6,8,9,11,13,14,15,16,19,20 | 3,4,7,12,17,18,19,20 | 19,20 | V | fifth |
| P20 | 2,5,6,8,9,10,11,13,14,15,16,19,20 | 3,4,7,12,17,18,19,20 | 19,20 | V | |
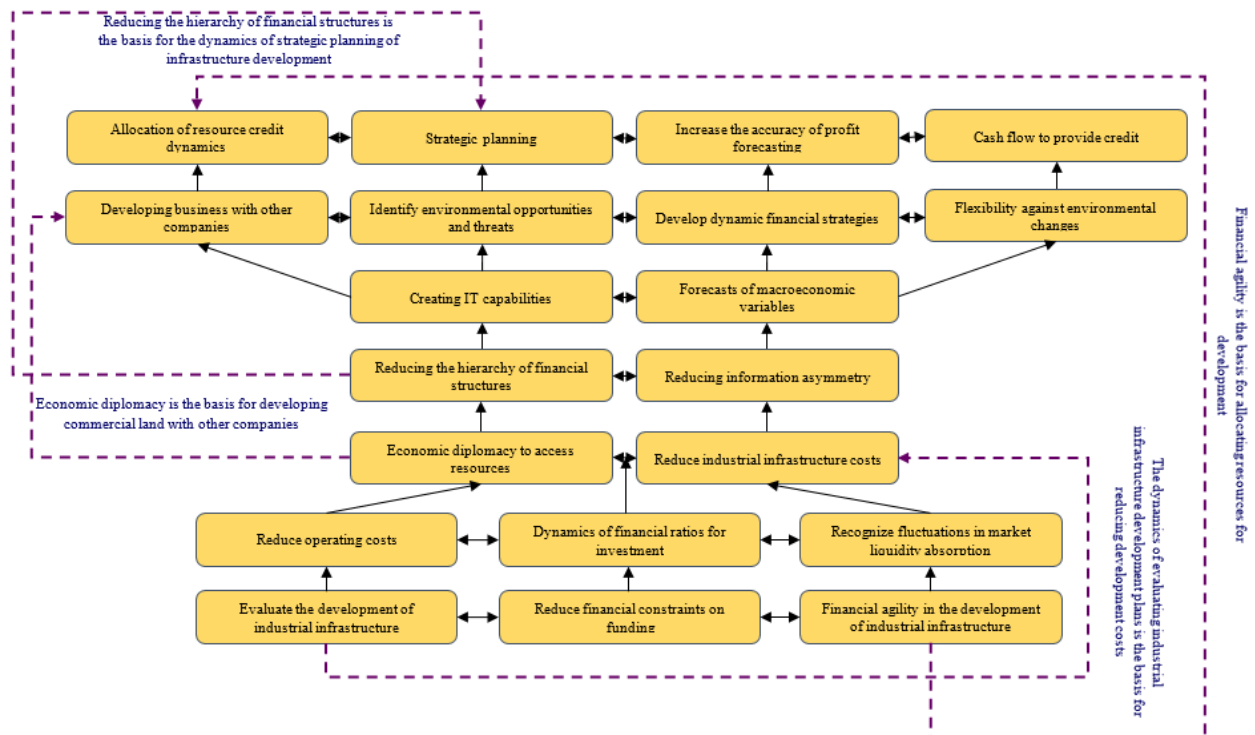


**Fig. 4:** Thematic Model Financial Flexibility Functions for Industrial Infrastructure Development of Abadan Oil Refining Company

## 5 Conclusion

Financial flexibility is considered as an effective process in the development of companies that leads to strengthening the investment capabilities of companies in various fields. In other words, financial flexibility is an effective function in the strategic development of the company and provides the basis for reducing financial and production costs through production line modernization capacities such as

machinery; technologies provides. The purpose of this study was to design a model of financial flexibility functions for the development of industrial infrastructure of Abadan Oil Refining Company. Based on the results obtained from the interpretive prioritization of financial flexibility statements for the development of industrial infrastructure of Abadan Oil Refining Company 3 propositions were identified; dynamics of evaluation of industrial infrastructure development plans and financial agility in industrial infrastructure development as a proposition of the component of operational functions; reducing financial constraints on the provision of resources for the development of industrial infrastructure as a component of managerial functions; there are reasons that play a decisive role in the development of industrial infrastructure in Abadan oil refining. On the one hand, the dynamics of evaluating industrial infrastructure development plans by estimating a positive Net Present Value (NPV) helps the oil refining company to select plans for industrial infrastructure development for investment in terms of financial operations functions, that the total income in the payback period on investment is estimated more than its costs, and this will help the company in the development of industrial infrastructure with a well-planned planning, to gain more benefits for such investment. The results show that financial flexibility has a significant positive impact on the enterprise performance of the machinery and textile industry and other manufacturing industries, but has no significant impact on the enterprise performance of the semiconductor industry. Furthermore, after subdividing the semiconductor industry into asset-heavy and asset light semiconductor industries, it appears that financial flexibility has a significant positive effect on the enterprise performance of the asset-heavy semiconductor industry, but has no significant effect on the performance of the asset-light semiconductor industry On the other hand, financial agility in the development of industrial infrastructure is another statement of the financial operations functions of Abadan Oil Refining Company Which is able to direct the company's financial performance based on the elimination of redundant layers and interference in financial decisions, towards more significant effectiveness both in speed and in reducing costs in decisions related to the development of industrial infrastructure, and make the company choose the time value of money to choose the best time to invest in its industrial infrastructure.

Also, at the level of the most influential proposition, it was found that reducing financial constraints in providing resources for the development of industrial infrastructure is another influential factor that as a management function allows the company to achieve the resources needed to develop investment in industrial infrastructure without financial constraints. These constraints, usually due to poor management practices in reassuring creditors and facilitators, may, as an obstacle, hamper the financial resources required by the company to develop industrial infrastructure, which optimal management functions can strengthen development capacities. Also, in the sixth level, ie the second layer of the most effective statements of financial flexibility for the development of industrial infrastructure of Abadan Oil Refining Company, 3 propositions were identified; Reducing operating costs is distinguished by reducing the depreciation and dynamics of financial ratios for investing in machinery as a component of operational functions and recognizing fluctuations in liquidity absorption at the market level as a component of competitive functions.

On the one hand, there are two statements of operational performance and on the other hand, a statement of competitive performance, which indicates that the oil refining company can play a more significant role in upstream regulatory bodies to develop investment in industrial infrastructure by dynamic financial ratios, this is because it can ensure that the company can reduce operating costs such as overhead and depreciation costs in the future from such investments. Investing in industrial infrastructure is a function that helps the company to develop its product line and develop current and new products, and strengthens the company's expandable capacity at the regional and global markets. On the other hand, with its competitive functions, the company is able to manage its processes for the development of investments by recognizing the fluctuations of liquidity absorption in such a way as to

create the most effectiveness for the Abadan Oil Refining Company, and the company should not face the challenge of an investment opportunity or start-up without future liquidity estimates. The result obtained with the research of Do and Mai [14]; Al-mana et al. [1]; Umar et al. [32]; Lin and Chen [20]; Mancini and Jose Paz [21]; Derakhshani Darabi and Mahnatfar [13] and Emami Meybodi [15] correspond. Based on the obtained results, it is suggested that Abadan National Oil Refining Company, in order to develop its industrial infrastructure due to the increase of competitiveness in this industry and the existence of crippling sanctions in the field of technologies in this field, should first select development plans for its infrastructure that having the level of special technical knowledge, to provide the necessary capabilities for the development of manufacturing similar technologies in the country. To this end, based on accurate estimates based on the net valuation of investment projects, select projects in this sector that will create the most effectiveness and efficiency for the development of the oil refining industry in the future. To this end, given the international constraints on direct entry into the field, it should put financial agility on the agenda so that, while overcoming the imposed constraints, it can pursue the best industrial infrastructure development projects to strengthen the level of productivity in this field.

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