

A Proposed Framework for the Role of Inter-Cost Management Techniques in Reducing the Costs of Industrial Cluster Enterprises to Support their Business Environment Competitiveness: A Field Study in the Saudi Arabia

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Abstract

The research aims to demonstrate the role of intra-cost management in reducing the costs of industrial clusters in small and medium enterprises to support their competitiveness. In addition building a comprehensive proposal framework for inter-cost management tools that are compatible with the characteristics of industrial clusters in small and medium enterprises in the modern business environment. And the extent of the contribution of the dimensions of this proposed framework in reducing the costs of the industrial cluster in the Saudi industrial enterprises. The research reached the building of a comprehensive proposed framework for inter-cost management tools that are compatible with the characteristics of industrial clusters, and the development of the mechanism of action of this framework. In the field study, the contribution of the dimensions of the proposed framework was also reached in reducing the costs of industrial clusters to support their competitiveness in the Saudi business environment. This was done by achieving several advantages for the industrial cluster enterprises, including: Reducing the total costs along the supply chain to the lowest possible level. Improving the quality levels of products. Improving the indicators of profitability within all the industrial cluster parties. Generating innovative designs that meet the needs and desires of all customers. And the speed to the change in the tastes and requests of customers within the industrial cluster. And in terms of the relative importance of each of the dimensions of the proposed framework. In the first order, in terms of relative importance, came the contribution of inter-cost management tools associated with suppliers. In the second order, the contribution of inter-cost management tools in the pre-industrial. And in the third order, the contribution of inter-cost management methods in the manufacturing. Finally, the contribution of inter-cost management methods associated with customers came in the fourth and final order in reducing costs and increasing the competitiveness of the industrial cluster facilities in the Saudi business environment.

Keywords: Industrial Clusters, Competitive Advantage, Inter-Cost Management Tools.

Introduction

Given the importance of small and medium enterprises in economic development, a new form must be sought to improve their performance and increase their competitiveness through what is called industrial clusters, through which economies of scale can be achieved for production inputs, and the optimal use of production capacity to meet the increase in demand, and cooperation between enterprises in Through increased specialization and division of labor, which leads to improving the productive efficiency of establishments and increasing their competitiveness, and under the circumstances and changes of the current business environment, competition is no longer between organizations only, but has become between their supply chains in other establishments (Haag et al., 2019) With the increasing intensity of competition and the challenges associated with providing products and services at the right time, place, and price, establishments seek to gain competitive advantages by improving industrial processes. Integrated supply chains (SCI) are considered one of the most important contemporary management methods to support the organization's competitiveness in terms of it being an integrated and comprehensive strategy. To enhance, consolidate and strengthen the competitive position of the organization (Yu et al., 2019).

The definition of clusters applies to gatherings of small and medium enterprises to produce a specific commodity with the aim of improving the competitiveness of the product. Clusters emerge as a modern way to accelerate development and formulate industrial policies and practices. Clusters are a system that links private and public entities consisting of groups of companies, suppliers, and various service providers such as transportation, shipping, marketing, and studies. Consulting and others are based on backward and forward links in a specific industrial activity. The cluster strategy relies on strengthening links and

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cooperation between stakeholders to develop into a common understanding of formulating the industrial policy process necessary to strengthen the industrial sector.

Research problem

There is no doubt that small and medium enterprises play an important role in the economies of all countries in addressing the problem of unemployment, reducing poverty, and stimulating economic growth. However, they are exposed to major challenges, including intense competition due to their higher manufacturing costs than large enterprises that enjoy economies of scale. Therefore, specialized and spatial convergence and cooperation are important. Between these industrial facilities through what is known as industrial clusters, it is an effective strategy to overcome and confront these challenges and improve the competitive position of that industry. Modern accounting studies have focused on developing modern methods of cost management to support and increase the competitiveness of companies, but most of the methods have been limited to their application to internal operations in Large establishments and did not take into account the external cooperative or inter-relations that prevail between establishments, which could represent opportunities to reduce costs, maximize returns, and improve quality for all parties of the business chain (Abdel-Dayem, 2015: 1058), especially in small and medium enterprises, which can form what is known as a cluster. Industrial.

From a practical point of view, the problem of the research lies in the lack of some kind of structural interconnection and lack of integration between small and medium enterprises that face problems related to supply, production, marketing and quality, which caused the problem of high costs, and from here arose the strategy of industrial clusters, which represent industrial relations between production units, service units and institutions. Governmental, financial and research support, which aims to develop the work of small and medium enterprises and solve many of the problems they face, whether in cost, quality or delivery dates (Brenner, 2004:19). This can be achieved through vertical links and inter-relations between supply chain facilities or inter-links and inter-relationships. Horizontal between facilities of the same production stage in different supply chains.

(Kwak & Gavirneni, 2011) pointed out that companies at the present time cannot achieve a sustainable competitive level by focusing on their individual performance only, but rather all their attention must be focused on their supply chain as a whole and the ability to satisfy changing customer needs and requests at the right time and with the right quality. At the lowest possible costs, and therefore the need has increased for the necessity of providing cost information that contributes to achieving competitive advantage, but in light of traditional cost systems that adhere to the internal organizational boundaries of the facility and that do not fit with the modern production environment that focuses on industrial clusters as a production strategy, which means crossing the organizational boundaries between projects. components of the industrial cluster or supply chain, which leads to improving the performance of the industrial cluster as a whole throughout the chain's life cycle through transparency in disclosing data and cost structures in mutual partnerships so that they can reduce costs through joint management of activities and operations and providing interoperable support. Bhimani et al mentioned ., (2011) that rapid developments in the manufacturing environment, increased competition, and the high need for external sources to obtain product components instead of manufacturing them internally have led to the necessity of paying attention to managing external relations to achieve competitive advantages by focusing on transforming the relationships between the parties of the chain into cooperative relationships, and focusing on operations. and value-producing activities for all parties in the supply chain.

(Palma-Meudoza et al., 2014) believes that competition in the field of business will turn in the future into competition between business networks and not between establishments and each other, and that the foundation on which building competitive advantage depends is the ability to achieve integration between various parties. network to provide the maximum satisfaction of customer needs at high speed and low cost, and since reducing costs is limited to internal activities only, while the reasons for the high cost may be the increase in the costs of dealing with external parties that the company deals with across the supply chain, the researcher believes that methods of managing inter-cost Through the supply chain, the industrial cluster strategy helps work to find additional ways to reduce costs, improve performance, and increase the

competitiveness of small and medium enterprises within the industrial cluster, and helps the company's suppliers and customers achieve cost savings, develop and improve performance by increasing the degree of trust between all parties of the supply chain in light of An integrated system for exchanging information, cooperation, integration, and stabilizing relationships between all parties of the supply chain, and in light of the industrial cluster strategy, which plays an effective role as a tool to enhance the productive and competitive capabilities of small and medium enterprises through its role in reducing costs, raising product quality, and enhancing the competitiveness of its products. Based on this, it can be Formulate the research problem in the following main research question:

- To what extent does intercost management contribute to reducing costs and supporting the competitiveness of industrial clusters in small and medium enterprises in the Saudi business environment? The following sub-questions branch out from this research question:
- What role do industrial clusters play in enhancing competitiveness in small and medium-sized companies?
- What are the methods of activating inter-cost management in the industrial cluster?
- Is there a role for inter-cost management methods in reducing costs and achieving competitive advantages for the industrial cluster in small and medium-sized companies?
- Is it possible to build a framework for inter-cost management tools to reduce costs and achieve competitive advantages for the industrial cluster in small and medium-sized companies?

Research objective

The research aims to build a framework for inter-cost management tools and demonstrate their role in reducing the costs of industrial cluster establishments in small and medium industries to support their competitiveness and answer the research questions through the following:

Identifying the role of industrial clusters in achieving competitive advantage for small and medium enterprises, which helps reduce the risks of competition with imported products in the Saudi market.

Building a framework for inter-cost management tools and their role in reducing industrial cluster costs in small and medium enterprises.

Testing the extent to which the proposed framework contributes to reducing the costs of industrial cluster facilities in the Saudi business environment.

The importance of research

The importance of the research lies in highlighting the role that industrial clusters can play in raising the competitiveness of small and medium-sized companies by gathering these industries in one place with the presence of feeding and supporting industries to produce one product, working to reduce the cost of production, applying modern technologies, and increasing production interconnection with feeding and complementary industries. And other economic sectors, as well, due to the recent topic of adopting the industrial cluster strategy in small and medium-sized companies and the role it plays in generating competitive advantages for those companies in the Saudi economy.

Research Methodology

The descriptive analytical approach was relied upon by studying published research and studies, analyzing statistics and linking them to the research objectives, as well as using the deductive approach to develop a theoretical framework for the role of industrial clusters in supporting the competitive advantage of small and medium-sized companies. The inductive approach will be applied to collect and analyze the necessary data and to test the research hypotheses in the field study. .

Research Plan

To answer the research questions and achieve its objectives and methodological challenges, the research was organized as follows:

- The theoretical framework of industrial clusters.
- Inter-costs:
- Previous studies.
- The proposed framework for inter-cost management tools.
- Field study

The theoretical framework of industrial clusters

The size of small and medium enterprises is not the problem facing these projects, but rather the problem is the lack of some kind of connection and integration between these projects in terms of production, marketing and employment, and from here the industrial cluster strategy emerged.

The concept of industrial clusters

The economist Michael Porter is considered the first to crystallize the concept of industrial clusters in his famous book, "The Competitive Advantage of Nations," which dealt with theories of localization of industrial projects based on the existence of a network of horizontal and vertical relationships between these projects that appear through the interconnectedness of the client/financier relationship, technological zones, labor, and distribution. Porter, 1990. (15)), and several definitions and concepts have emerged about industrial clusters. Zairi (2007: 7) defined them as "gatherings (geographical, local, regional, global) of a number of geographically close institutions and their affiliated institutions belonging to a specific field, linked by complementary relationships and common interests." Between institutions linked and connected to each other in a specific field, which represents a system of activities necessary to encourage and support competitiveness through industrial clusters. Marten believes that industrial clusters can be viewed as interconnected industrial clusters that work to enhance the generation of material and economic wealth in the region through the export of goods and services, because using this strategy as a tool to describe economic relations helps to strengthen local industries instead of adopting the traditional method, as companies may differ. Which rely on industrial cluster strategies rather than traditional companies because they represent the entire value chain of a broad industry, including many end-product suppliers and distributors, including support services and specialized infrastructure (Marten, 2011:16).

As for Suhaib (2012), he defined it as geographical clusters that may be local, regional, or global for a group of geographically close companies that are linked to each other through complementary relationships and common interests in a specific field, which represents a system of activities in order to strengthen and encourage competitiveness (Suhaib, 2012: 33). Prokhorova, et al believe that it is represented by a number of industrial companies interconnected with each other geographically and locally, which are integrated in the production of a series of products in a way that contributes to the development of modern trends in production and improving the efficiency of the regional economy on the basis of the cluster approach (2018:4) (Prokhorova, et al.

The researcher believes that industrial clusters are a grouping that includes a group of industrial projects and a group of institutions associated with and supporting them, which are characterized by the presence of common factors, whether technological, marketing channels, labor, or forward and backward relations between them, and whose interconnection is considered necessary to enhance the competitiveness of the members of the cluster, whether they are small projects or Medium or both, and there are two types of industrial clusters: Doeringer, 1995:37). Zairi, 2007: 174)

- Vertically integrated clusters: They are formed from industries that are interconnected through the buyer-seller relationship, meaning that they are vertical integration relationships (forward and backward) that take place between institutions that are in different stages of the industrial process, and thus the cluster in its true form constitutes a network of diverse industrial relationships.

- Horizontally integrated clusters: They are formed from industries that share public markets for final products, use similar technology, need similar natural resources, or possess similar labor skills, meaning that it is a horizontal interconnection relationship that takes place between institutions that are in the same production stage.

The importance of industrial clusters

Many companies adopt industrial cluster strategies in order to achieve internal and external profitability, because this type of cluster plays an important role in increasing productivity and thus increasing profitability. Therefore, Yoshino (2011:5-7) emphasized that industrial clusters have a prominent importance that lies in:

1. It can help small local businesses overcome size constraints and enter new markets.
2. Ease of obtaining industrial process inputs and lower transportation, storage, and production costs.
3. Enabling small businesses and factories to achieve better sales performance in the same industry, same city.
4. Naturally formed industrial clusters reduce the constraints they face in accessing markets, suppliers and customers.
5. Granting SMEs the ability to improve efficiency by eliminating non-value adding activities.
6. It makes it possible to find local suppliers for production inputs at a relatively lower cost than importing them, which contributes to enhancing competition.

Objectives of industrial clusters

The industrial cluster strategy includes some goals that many companies seek to achieve by going beyond the idea of abstract clustering to the real will for cooperation and coordination between the various elements of the supply chain, which ultimately leads to greater profitability for all, and the development of the industry through vertical and horizontal integration of production at the product level. As well as to develop skills by achieving the best integration of value chains, and thus dividing industrial tasks more effectively. (Lines & Mony Penny, 2006:5)

How industrial clusters work

The mechanism of operation of the industrial cluster is based on five basic principles: geographical concentration, specialization, innovation, competition, and cooperation. Through the combination of these principles, the cluster institutions can achieve the required competitiveness, within the framework of various industrial relations links in the various stages of the industrial process, whether they are links or inter-relations. Horizontal or vertical, which represents a system of activities that help increase opportunities for specialization and division of labor and achieve competitive advantages. This is done by forming an integrated industrial cluster in which all establishments in the cluster cooperate to achieve higher profitability for all, by creating an environment of competition that leads to raising productivity and innovative capabilities. For establishments operating in the industrial cluster. (Zarqin, 2014; Hafsi, 2019; Bouaziz, Al-Hadi, 2013; Al-Moussawi, 2017)

Components and interrelationships in the industrial cluster

It means the ties that are supported by contracts and charters that include a culture of cooperation. This cooperation is considered a strategic choice for the organization that is in line with the transformations that occur in its surroundings, and we present the components and interrelationships in the industrial cluster:

First - Components of the industrial cluster: (Wahiba, Lebaal, 2016: 100-101)

Industrial clusters are formed from an unspecified group of institutions that differ in size. They may be small and medium enterprises, large enterprises, or a combination of the two types, which is the norm for industrial clusters. Small and medium enterprises constitute the largest percentage of enterprises belonging to the cluster, because the basic elements that are assumed The industrial cluster should include manufacturers of final products, manufacturers and suppliers of production inputs and equipment used in the production process, and producers of complementary products. The availability of human capital (qualified human resources) is also one of the most important production factors that is decisive in attracting institutions to work in the cluster. Figure No. (1) summarizes the most important elements that make up the industrial cluster, as it is clear from the figure the extent of integration and cooperation that takes place between the various elements in the industrial cluster, as it The concept of the latter, based on coordination between the various elements of the chain, ultimately leads to achieving higher profitability for all, and this is through creating an environment of competition that leads to increased productivity and innovations, achieving an advantage for the industry as a whole, and from there increasing competitiveness.

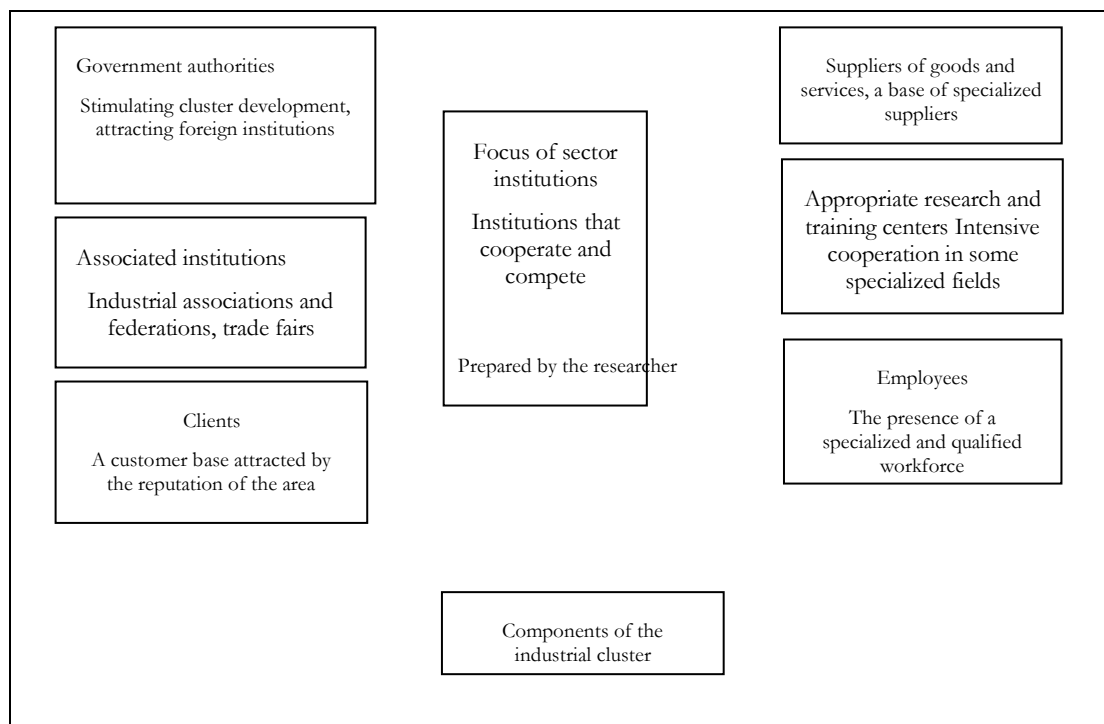


Figure No. (1)

Second: The concept of inter-relationships within the industrial cluster

Williams defined an interrelationship as “groups of legally separate establishments and organizations connected to each other through common goals and exchange relationships that are maintained and continued,” which follows from the need of two or more establishments to cooperate together to accomplish a particular work based on their desire, mutual trust, and agreed-upon benefits (37:Williams, t., 2005).

The concept of inter-cost management has gained great importance as a result of the transformation of competition between companies into competition between supply chains for the product and its components at the industry level in general and at the industrial cluster level in particular, as the parties of the industrial cluster within the supply chain seek, through inter-cost management, to make optimal use of resources. And reducing the cost of the product to maximize the competitive advantages of all relevant parties in the supply chain within the industrial cluster. (Cooper & Slagmulder, 2004) indicates that the facility can support its competitive and strategic position and reduce its costs by coordinating its cost management programs with the participants in the inter-relationship. Inter-relations provide a good opportunity to combine many diverse skills to develop products and services, and helping suppliers improve and develop their performance can be an appropriate gateway to improving product quality and reducing their costs.

(Abdel Dayem, 2015: 1064) believes that interrelations based on trust and achieving mutual benefits for their parties can be an appropriate means to overcome the opportunistic behavior that may exist among one of the parties to this relationship, reduce the state of uncertainty, and participate in managing the costs and risks that the facility or company may be exposed to. Any other party participating in this relationship, in addition to the possibility of obtaining the necessary financing, especially for small enterprises, and trust between the parties to the relationship will work to reduce conflicts between them, reduce negotiation costs, and solve problems of asymmetry between them, which increases their ability to achieve cooperation and interaction between them. It helps to strengthen the inter-relationship and coordinate joint efforts between them to reduce costs for all parties and allow for achieving a competitive advantage, through inter-cost management programs, which are considered a practice of strategic cost management, which extends beyond the internal cost to include managing the costs of the parties to the external inter-relationship.

Inter-cost management

The need has increased to provide accounting information that contributes to achieving competitive advantage in light of the inability of traditional cost systems that adhere to the boundaries of the organizational facility and are not compatible with the supply chain in the environment of industrial clusters, which necessitated the emergence of the concept of Inter-Organizational Cost Management (IOCM), which means transcending the organizational boundaries of companies. Components of the supply chain to include the industrial cluster, which leads to improving the chain's performance and maximizing its profitability through cost reduction programs during the supply chain life cycle (Cooper & Slagmulder, 2004).

Inter-cost management is one of the modern trends in management accounting that seeks to achieve competitive advantages, as interest is no longer in cost management activities within the boundaries of the facility, but rather its interest has expanded outside the organizational boundaries to include all establishments in the supply chain, which need to reveal data and cost structures in light of relationships. Partnership so that they can reduce costs through joint management of activities and operations and providing interoperable support between them, and intercost management contributes to providing the necessary information to direct costs in the right paths with the aim of reducing waste of non-value-added costs, and thus it is considered a preventive control over costs and their expenditures.

(Cooper & Slagmulder, 2004) defined inter-cost management as an organized approach that includes an integrated set of cost management tools and mechanisms that are applied through joint efforts between suppliers and the facility to manage the cost that exceeds the boundaries of the facility. (Al-Hadary, 2016: 21) defines it as cost management Interface costs that arise outside the organizational boundaries of the company and are based on the integration between the analysis of the internal value chain and the analysis of internal cost drivers, by focusing on managing costs associated with activities that affect the facility and its partners, whether suppliers or customers, and (Abdel Dayem, 2015: 1066) believes that it This relationship may extend beyond the flows that occur between them, whether they are flows of demand, information, products and services to the customers of the primary customers and the suppliers of the primary suppliers, in an attempt to reduce the cost related to the final product while not sacrificing the level of quality that satisfies customers. Yu &Huo refer to it as coordination and cooperation The formal

agreement between all supply chain partners to measure, analyze and improve products and processes to create value and achieve customer satisfaction, intermediate and final in the labor market, 2018) (Yu &Huo. (Burin et al. 2020) defines the supply chain as calculated choices made by a manufacturing company through its administrative body to explore the supply chain as well as practice exploitation at the same time, that is, the manager's ability to integrate and reshape the resources of both the company and the supply chain parties through exploration and exploitation practices. . Yuhong, Shuya, 2020:660 sees (Inter-Cost Management (IOCM) as an integrated set of cost management tools that are applied between the supplier and the buyer through a set of coordinated actions with the aim of creating ways to manage the cost through joint work among the parties of the supply chain.

From the previous definitions, we conclude the focus on managing the inter-costs within the boundaries of the establishment and the inter-costs with external parties within the supply chain in the industrial cluster, in a way that works to improve the strategic position of the establishments that are members of the inter-relationship by achieving the highest value for customers at the lowest possible cost, and taking advantage of its advantages in improving factors. Success, which is represented by quality, cost and innovation, is achieved through cooperation and exchange of information between the parties to the relationship in the cluster to improve and raise the efficiency of the interoperating processes between them.

Requirements for successful inter-cost management in an industrial cluster (Abdel Dayem, 2015: 2066-2068)

1. The necessity of selecting suppliers who are able to fulfill their obligations: The process of selecting suppliers who are able to fulfill their obligations on time and at the agreed upon level of quality is one of the requirements for the success of managing inter-costs in the industrial cluster, because it helps to provide trust and continue relations with them and thus reduce inter-costs and achieve benefits for all. Parties of the industrial cluster. Khalifa believes that the exchange of information between the buyer and the supplier is an important matter that increases the capabilities of the establishments, reduces their costs, and maintains the quality of the product, as the exchange takes place in two directions. (Khalifa, 2021)
2. Cooperation between the parties of the industrial cluster: The production capabilities, resources and business functions located inside and outside the facility should be unified among all business partners, and the importance of supply channels should be determined within the framework of competitive advantage and customer synchronization in the flow of services and products to the market and the information necessary to create excellence as a source of customer value (Ross et al Delphi, 2017: 578), Al-Delphi explains the importance of adopting the concept of supply chain management and takes into account the functional activities of supply chain units in achieving effective management of the chain, which helps in providing distinguished services and products to the end customer (Al-Delphi, 2021: 17).
3. The degree of the level of information sharing and exchange between the components of the industrial cluster: The level of information sharing and exchange plays an important role in the success of the inter-cost management process in the industrial cluster, and the degree or level of information sharing depends on two main factors: the quality of the information and the cost of obtaining it (Tayles, 2014 & Mohd - Jamal).
4. The availability of trust between the dealing parties within the industrial cluster: There is no doubt that the availability of trust between the dealing parties reduces the degree of uncertainty and contributes to disclosing information without hesitation or fear of the emergence of any opportunistic behavior (Potocan, 2009), and most companies tend to adopt the concept Managing supply chain relationships by focusing on a smaller number of suppliers and active overlapping interaction through cooperation and partnership relationships within the industrial cluster (Al-Jubouri, Al-Tammi, 2021: 137)
5. The presence of joint teams that include members representing the parties of the industrial cluster: We should shift from the idea that the last member in the supply chain is solely responsible for reducing costs and improving the level of production by virtue of the fact that he has a direct relationship with the final customer to the fact that reducing costs and satisfying the customer can only be achieved through

collaboration. The efforts of supply chain members involved in producing the product so that chain members know what the overhead costs are and how to reduce them. (Lateur, 2018:5).

6. The existence of a mechanism that ensures the leadership of all parties in the chain and directs their efforts towards the goal of reducing costs and supporting competitive advantages, provided that this mechanism is characterized by transparency, working in real time, cooperation, ensuring non-tampering, and other factors that guarantee success, such as the use of block chain technology in tracking the supply chain through... Use of a data logger capable of historical and immutable recording that ensures transparency and traceability within the supply chain in the industrial cluster.

7. Control mechanisms: These are the mechanisms that are used for observation and correction and are derived from the control procedures that must be established before implementing inter-cost management. These tools include target cost and inter-cost estimates. (Al-Saghir, 2020: 143)

8. Empowerment mechanisms: These are tools that support the skills and competencies necessary to overcome the problems that can result from the application of inter-cost management. They also help the parties in the relationship coordinate their efforts to achieve cost management goals. Examples of these mechanisms include value engineering, open accounting records, and concurrent cost management. (Rocha & Souza, 2011)

Previous studies

Studies that dealt with industrial clusters

Many studies have dealt with industrial clusters. Al-Haddad's study (2022) dealt with the Furniture City in Damietta Governorate as an applied study to pursue the industrial cluster strategy in Egypt to identify the current status of this cluster and examine the extent of its success in achieving the role for which it was established. It was found that the Furniture City stopped in the formation stage. The study recommended the importance of directing state policies to support and develop this cluster and providing a package of supporting mechanisms to complete the furniture city as a phased preparation for the transformation into an integrated industrial community for the furniture industry in Damietta. As for the study by Shukr, et al. (2021), it mainly aimed to test the role of industrial clusters in achieving customer satisfaction. By conducting an analytical study of the opinions of a sample of managers and workers in production departments, a set of conclusions were reached, the most important of which is the existence of a positive and significant correlation between industrial clusters and customer satisfaction. Fouda et al.'s study (2021) sought to identify the concept of industrial clusters. And its impact on enhancing the competitiveness of industrial sectors through a "case study" to identify the nature of some models of industrial clusters existing in countries of the world. The results indicated that industrial clusters are better in quality and lower in costs and time than the traditional method, and that industrial clusters are the right path to the success of countries in industry. of geographic clusters and forward, backward, and horizontal interconnections based on the exchange of raw materials, goods, and expertise. Shukr's study (2020) targeted the capabilities and opportunities that small and medium enterprises in Egypt can benefit from through a proposed approach to integration between industrial clusters and statistical quality control methods. Among the results were: The field study showed that integration between industrial clusters and statistical quality control methods led to an increase in the competitiveness of small and medium enterprises.

Studies that dealt with inter-cost management

The research aimed to demonstrate the impact of value chain analysis on product costs along the supply chain in Yemeni industrial facilities in the capital, Sana'a, from the point of view of its financial managers and accountants, with the aim of maximizing the use of limited resources and rationalizing decision-making for each facility in the supply chain and for the chain as a whole. The research adopted the descriptive survey approach. Correlative, and the research concluded that value chain analysis contributes to reducing the cost of the product along the supply chain by exploiting the interconnections and overlap between the analysis of both the value chain and the supply chain for both suppliers and customers. The study by

Ahmed, et al., (2021) sought to determine the impact Direct study of the dimensions of supply chain quality integration on supply chain prowess in public pharmaceutical sector companies in Egypt. The results indicated that there is a positive moral effect of internal quality integration on supplier quality integration. It also found that there is a positive moral effect of internal quality integration on customer quality integration. The results confirmed the presence of A direct positive moral effect of the dimensions of supply chain quality integration on supply chain prowess. The study by Saleh, Rizk, and Marwan (2021) targeted the role of block chain technology in activating inter-cost management tools, and the research concluded that the use of block chain technology (Bockchain (BC) leads to... Improving product quality levels, and increasing the company's response speed to new changes in the business environment in which it operates. The research results showed that one of the benefits of applying (BC) technology is increasing the level of exchange of cost information and contributing to achieving an optimal product cost structure, which leads to Reducing costs and achieving higher productivity by allocating resources to higher value-added activities. The study (Al-Rakhami & Al-Mashari, 2021) attempted to build a proposed model to create trust in supply chains with Internet of Things technology. The model also contributed to facilitating the data sharing process, reducing computing and storage requirements, and reducing response time while increasing security in existing supply chain management. On the Internet of Things, this method can also be used to track and manage products across the supply chain, so data can be shared securely between member establishments in the supply chain. The aim of the study (Al-Sagheer, 2020) was to develop a methodology to test the impact of applying one of the digital transformation mechanisms, which is chain technology. Blocks in supply chain tracking help activate the inter-cost management tools for that chain. Emphasis was placed on the role of that technology in supporting both the value chain analysis method, the target costing method, and the open records accounting method, as they are among the most important inter-cost management tools for the supply chain, and its impact on supporting The competitive advantage of the supply chain. The study found that there is a positive statistical correlation between the application of block chain technology in tracking the manufacturing supply chain, coordinating efforts and relationships, and supporting value chain analysis among the parties of the chain. There is also a statistically significant correlation between the application of block chain technology in tracking the supply chain. Manufacturing supply and activating the target costing method and the open records accounting method as tools for managing inter-cost along the chain and supporting the competitive advantages of that chain. The study by Abdel Majeed, et al., (2019) also aimed to analyze and explore the role that the integration of the two methods of target costing and open records accounting can achieve in activating the management of inter-costs with the aim of achieving competitive advantages for the supply chain parties. The study concluded the importance of integrating the two methods and their role in enhancing and activating cost management. The interface and the importance of choosing suppliers before starting the manufacturing process helps provide information that helps eliminate activities and jobs that do not add value. Al-Batanuni's study (2013) provided a framework for selecting supplier companies that can cooperate together for the success of open records accounting by choosing a set of incentives to encourage supplier companies to participate, and how to overcome the opportunistic behavior of the purchasing company. The study concluded that supplier companies do not prefer to disclose data. costs under the use of open record accounting due to their fear of the opportunistic behavior of the purchasing company.

Analysis of previous studies

It is clear from the review and analysis of previous responses that they focused on the following:

1. Most previous studies focused on the issue of reducing and managing the inter-costs of the supply chain to enhance the competitive position of chain members. There were also many methods used for this, including the target cost method, the continuous improvement method, Internet of Things technology, block chain technology, and the cost spreadsheet method.
2. A large number of previous studies focused on using one or more methods of inter-cost management to reduce costs, improve performance, and enhance competitive position without presenting a comprehensive framework that combines all methods.

3. Some previous studies focused on the determinants of inter-cost management in light of the requirements of strategic cost management.

4. No previous study, to the researcher's knowledge, has addressed the development of a comprehensive framework for the integration of inter-cost management tools and their role in enhancing the competitiveness of industrial clusters in small and medium enterprises, which is what this study aims to achieve and distinguishes it from previous studies, which demonstrates and highlights the importance of the current study.

The most important features of this study

The research directed its attention to building a comprehensive framework that brings together methods of managing inter-costs that are compatible with industrial clusters, with suppliers, before manufacturing, during manufacturing, and with customers, and demonstrating the impact of integrating the tools of this framework on the small and medium enterprises that constitute the industrial cluster in achieving competitive advantages. This is something that was not addressed in any previous studies, which shows the importance of this research in light of local and global competition.

Research hypotheses

1. Integrating inter-cost management methods in the pre-manufacturing stage contributes to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.
2. Integrating inter-cost management methods in the manufacturing stage contributes to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.
3. Integrating methods for managing inter-costs associated with suppliers contributes to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.
4. Integrating methods for managing inter-customer costs contributes to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.
5. The integration of the methods of the proposed framework for managing inter-costs contributes to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.

A proposed framework for forming an industrial cluster

The proposed framework for inter-cost management methods aims to create interaction and integration between industrial cluster establishments across the value chain at all stages of the product life cycle, starting from the stages of designing, manufacturing and marketing the product to reach the lowest levels while achieving the required level of quality and timely delivery, thus gaining The industrial cluster provides competitive advantages both at the local market level and in global markets, which ultimately leads to supporting the competitiveness of the national economy as a whole. The proposed framework is represented in Figure No. (2):

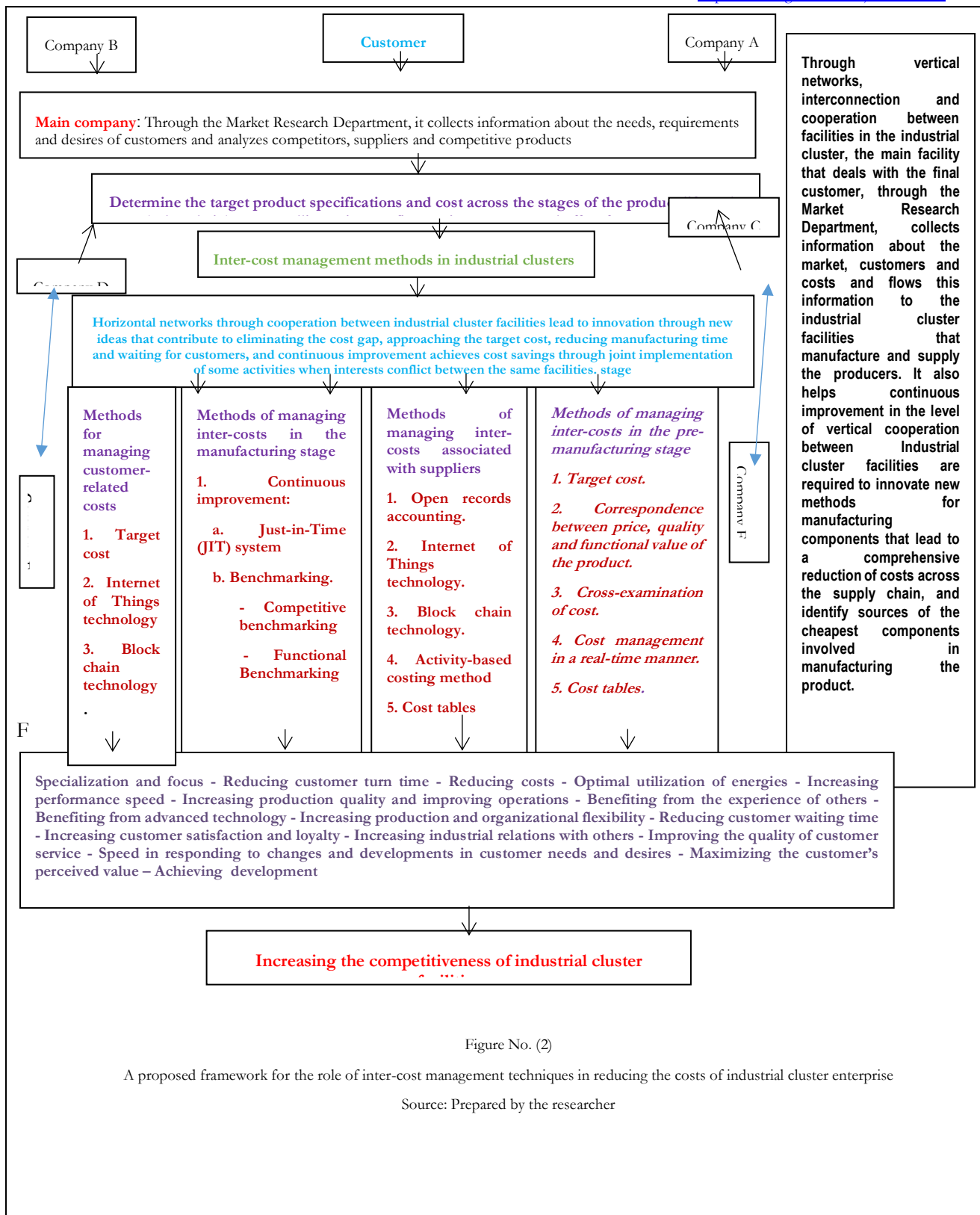


Figure No. (2)

A proposed framework for the role of inter-cost management techniques in reducing the costs of industrial cluster enterprise

Source: Prepared by the researcher

These methods will be explained as follows: (Saleh, et al., 2021; Shukr, 2020; Al-Saghir, 2020; Shaheen, 2017; Al-Jubouri, Al-Tami, 2021; Khairy, 2007; Al-Battanouni, 2013; Mahariq, 2017; Cooper & Salgmulder, 2004; Pradham, 2018; Blocher et al., 2010. Holweg&)

Methods used in the pre-industrialization stage in the industrial cluster

1. Target Cost (TC): The target costing method seeks to maximize profitability in the short and long terms through feed-forward, which helps reduce the cost during the design stage instead of influencing it during the manufacturing stage (Hibbets et al., 2003), and a series of The blocks support all stages of applying the target costing method by forming work teams that include all disciplines from all parties of the supply chain, including designers, engineers, accountants, and marketers, to be responsible for the product from the beginning of the initial idea until its use by the customer. There is no doubt that this coordination and effective communication between all disciplines In managing internal operations, it contributes to removing organizational barriers, increases the exchange of non-changeable and tamper-evident information derived through data blocks, and facilitates the cooperation of supply chain members within the industrial cluster, including suppliers, customers, and distributors, to innovate new ways that reduce components and costs to reach the target cost figure. Tang et al., (2018), through the links on the block chain - Nodes - these nodes link various functions and activities such as design, manufacturing, marketing, procurement and distribution in order to achieve integration of the supply chain across organizational boundaries, whether inside or outside the facility, where the outputs of the target costing method become At the single-part level, it serves as a direct input to the supplier's target costing method and is taken as a basis for monitoring target selling prices. (Al-Saghir, 2020).

2. The comparison between price, quality, and functional value of the product trade-offs (FPQ)

Functionality-price- quality: This method is considered important for managing interactive costs between companies, especially in cases where the costs of the supplying companies may be greater than the targeted costs of the products. The only option available to reach the target cost level is to reduce the functional performance of the product as well as the product specifications (Cooper and Salgmulder, 2004), and from the point of view of (Cooper and Salgmulder, 2004), using the value engineering method in this case is considered one of the factors that support The success of the trade-off between performance, price and quality as one of the cost management methods between companies. Therefore, resorting to applying the trade-off between performance, price and quality is usually one of the outcomes resulting from resorting to applying the value engineering method to one of its products and components, and the blockchain plays an important role. In overcoming the problems of manufacturing cost overruns for product components from all parties of the supply chain through negotiation between the design teams of chain members based on information derived from the blockchain nodes, which is characterized by accuracy, transparency and non-falsification, which contributes to amending specifications and not exaggerating by deleting costly and non-host activities. Valuable and unnecessary to the customer. (Jacomit, et al., 2011)

3. Inter-organization Cost Investigations (ICI): This method is applied if the method of comparing price, quality, and functional value of the product (FPQ) fails to reduce inter-organizational costs within the industrial cluster, which requires the participation of designers and manufacturing engineers of buyers. Suppliers make fundamental changes in the specifications of parts and components used in manufacturing the product. (Cooper and Salgmulder, 2004:6). These fundamental changes in part specifications require significant intervention from design teams and conscious application of value engineering methods to achieve a reduction in the initial cost. There is no doubt that the blockchain plays an active role in these negotiations through the accurate and credible information it provides, trust and mutual commitment between all parties to the chain. Supply to reduce the initial cost, in addition to the fact that programmed smart contracts will ensure that there is no tampering. (Al-Saghir, 2020: 164)

4. Managing costs in a simultaneous manner: Concurrent Cost Management (CCM) This method is used to address problems that require a significant reduction in costs, and it is considered a method for managing the negotiation process between institutions within the **industrial** cluster at an early stage with suppliers in the product design stage to reach the best design. For the product, it leads to reducing the costs of the industrial cluster. This method is distinguished in its application in that it begins with attention to reviewing the processes and activities related to the design at an advanced stage compared to the timing of applying both the method of examining interactive costs between companies and the method of comparison between performance, price and quality, which does not achieve cost reduction to reach the target cost as a result of someone's delay. Parties in the supply chain participate, which leads to the need to

manage costs simultaneously by providing innovative solutions to customers (Saleh, et al., 2021). The approach to cost reduction activities by applying the concurrent cost management method depends fundamentally on the changes that occur in the design. With regard to both the parts obtained from suppliers or the final product itself in which these parts are produced, which helps save more time for suppliers to design their products (Shahin, 2017: 67)

5. Cost Tables: Cost tables are important tools for establishments that use the target costing method (Agndal & Nilsson, 2009). Cost tables are more useful in the design and development stage of products because they give immediate answers about the cost of alternatives available to the establishment at the appropriate time. (Khairy, 2004).

Methods used in the manufacturing stage within the industrial cluster

1. Continuous Improvement (CI): Continuous improvement is defined as a set of procedures that are followed for the purpose of improving production and cost performance during the production stage, which aims to reduce the cost of the product and strengthen the competitiveness of the facility (Al-Jubouri, Al-Tammi, 2021: 140), and it is considered Continuous improvement is one of the methods of eliminating waste and waste in activities that do not add value but add costs and then delete them, adding value to customers, increasing profitability and maximizing value for the customer. There are two types of uses for continuous improvement costs: (Shahin, 2017: 20-31)

a. Undirected continuous improvement costs: This method is used in order to reduce the costs of the products that the company produces. The undirected continuous improvement method consists of two types of programs:

- Periodic short-term programmes: These are programs that are prepared on an ongoing basis from one period to another and are used to reduce direct costs represented by direct material and labor costs associated with the manufacturing stage.

- Long-term, extended programs: These are programs prepared for a long period and used to reduce indirect cost items by reducing the demand for production support activities. The reduction extends over many time periods.

B. Continuous improvement costs associated with specific items: This method consists of two types of improvement:

- Continuous improvement linked to the costs of specific products: Companies use this method to increase cost reduction rates for products that face intense price competition in the market to ensure.

- Continuous improvement related to the costs of specific components: This method is used to achieve a rapid and substantial reduction in the costs of some components that suffer from an excessive increase in costs, so that these savings are added to those achieved.

As for the methods of continuous improvement, they are as follows: (Al-Jubouri, Al-Tami, 2021: 140)

1. Just-in-Time (JIT) system: This system is considered a management philosophy to eliminate loss and waste in every area of the company, as it is based on modern manufacturing technology and meets the requirements of that environment in terms of product flexibility, response time, and quality, which represents a source of competitive advantage (Kumar & Anand, 2015:31). Hence, it supports the position of industrial cluster establishments in competing in local and international markets.

2. **Benchmarking (BM):** This method is considered an organized technique for learning from others by observing the methods of outstanding performance that are available within the establishment and other establishments that have excelled in certain fields and determining the best performance in order to support the trend towards continuous improvement in performance by choosing priorities. Improvement in

performance, which meets the expectations and needs of the customer to reach ideal performance in the company (Al-Jubouri, Al-Tammi, 2021: 140), and for all industrial cluster facilities. Benchmarking is considered an approach to positive change through an external view that leads to internal improvements, by trying to answer two questions: First: How did others become better? The second: How can we be better? More than that, it is an initiative or simulation of the best of the best (Al-Batta, 2015: 20), and benchmarking seeks to make a comparison with leading establishments in the same field of work of the establishment and includes: (Al-Jubouri, 2022: 172)

Competitive benchmarking is based on direct comparison with the best competitors to achieve better levels of performance. Therefore, it is called performance benchmarking and is used in the field of comparing products, services, technology, workers, quality, pricing, and other areas.

Functional Benchmarking, also called practical benchmarking, includes comparing a specific function such as human resources management, marketing, or any process such as employee training or others with similar ones in other establishments. The comparison may be made with units working in the same field or other fields.

Methods related to supplier costs

1. Cost Tables: Cost tables are databases that contain details of the product's cost in light of the potential or expected impact of factors affecting manufacturing cost. Accordingly, the researcher believes that cost tables play an important role as a method for reducing supplier costs, and also as a method for reducing pre-manufacturing stage costs. .

2. Activity-based costing (ABC): The activity-based costing method allocates resources on the basis of the activities that benefited from them, and then allocates the costs of these activities to the products according to the rate at which they benefit from these activities (Farraj, Manal, 2019: 439) In light of relying on inaccurate information about the cost of products and thus their profitability, which may expose industrial cluster facilities to risks, the activity-based costing system plays an important role in activating the management of inter-costs for supply chain facilities within the industrial cluster by estimating the amount of resources that activities receive. And then the importance of (ABC) increased in light of the following: (Farraj, Manal, 2019: 440)

- The cost structure of industrial facilities has changed in the modern production environment as a result of the complexity and diversity of products and operational processes, and then the increasing proportion of additional costs associated with activities that are difficult to attach or link directly to the products.

- When the main establishment is connected to its suppliers and customers within the framework of the supply chain, another type of additional costs appears, which is the cost of transactions, which arise from all communication and coordination activities among establishments throughout the industrial cluster. Therefore, information must be available about the cost of performing these transactions, which is provided based on joint efforts. To develop an electronic information exchange system, the cost of activities for processing purchase orders from suppliers may decrease, as well as the cost of processing sales orders from customers, thus reducing additional costs for each facility on the supply chain within the industrial cluster.

Using the activity-based costing method allows providing accurate data on the performance of activities and operations throughout the industrial cluster facilities, where resources are consumed, and how value is generated for the customer. There are multiple causes of cost, which contributes to identifying value-adding activities that must be maximized, and identifying non-value-added activities. Adding value, the cost of which must be reduced or eliminated, which helps in reducing costs, improving performance, reducing completion time, and raising quality levels in all industrial cluster facilities, which is reflected in customer satisfaction and increasing the competitiveness of the industrial cluster.

3. Open Book Accounting: The open records accounting method is considered one of the strategic management accounting methods that works on cooperation between establishments in the supply chain

in a way that supports mutual trust within the establishments of the industrial cluster and provides accounting and non-accounting information that helps in the flow of products between establishments within the industrial cluster. This enhances its competitive position, and this is done by all parties of the supply chain disclosing their cost structures to each other, which helps reduce the joint costs associated with the total cost of the product and supports the competitive advantages of all parties. (Obaidullah, 2015), and Mahreek sees the importance of having integrated information systems and open communication channels between members of the supply chain to obtain immediate and real-time information, and that information technology plays an important role in the process of exchanging information between members of the business network (Mahareeq, 2017), and some researchers believe The blockchain supports open records accounting as follows: (Al-Batanuni, 2013; Mahareq, 2017; Al-Sagheer, 2020; (O'leary, 2019 Hossein & Nicolette, 2017; Abeyatne & Monfared, 2016; Helen & Maria., 2017))

- Eliminating opportunistic behavior in light of the spread of information asymmetry throughout the supply chain.
- It is an approach that supports cooperative relationships along the supply chain and thus exchanges information and ideas to better manage the early stages of the product's life cycle. It also helps in energy planning, production scheduling, and manufacturing a distinct product in the shortest time and faster arrival to the customer.
- Overcoming the problem of lack of transparency by ensuring the availability of all information related to all parties of the supply chain in an accurate and reliable manner, without tampering or falsification, and in the true historical order to record transactions.
- It allows the systematic disclosure of cost structures within the framework of the interrelationships between supply chain parties and indicating areas of reducing the total cost of the supply chain.
- Ensuring commitment to disclose all transactions and information by all parties of the chain, in addition to ensuring a time fingerprint that shows the real time of transactions.
- It contributes to concluding smart contracts between the parties of the supply chain, encrypting those contracts and uploading them to the blocks, enabling the contractor to implement the condition automatically as soon as what was agreed upon in the contract is fulfilled.
- Providing accurate cost information about raw material costs during the supply stages to all parties in the supply chain.

4. Internet of Things technology: Internet of Things technology (IOT) is considered one of the most important modern technological methods that provides information in real time as soon as an event occurs, and some consider it the next technological revolution in the information and communications technology environment after the computer revolution (ping, 2011:1:4; Matyac, E., 2015: 62:63), which has achieved a significant reduction in the inter-costs of the supply chain, supporting the competitive advantage of chain members, improving the process of participation and information exchange between members of the supply chain, increasing customer satisfaction and enabling them to keep pace with continuous changes in their desires. and their needs (Saleh, Samir Abu Al-Futouh, Al-Basiouni, Muhammad Jamal, 2019: 721).

Hackius & Peterson believe that by activating Internet of Things technology, relationships with suppliers can be supported, as raw materials at suppliers in the supply chain can be equipped with sensors that generate data throughout the chain about the status of raw materials, the additions or withdrawals that occur on them, and their locations, which helps in Revealing the expected reductions in chain costs (Hackius & Peterson, 2017), and the Internet of Things also helps in the processing of raw materials through sensors that generate data along the supply chain, and this data is stored in an easily accessible and immutable way, and the Orosy study has proven Internet of Things technology contributes to creating an integrated supply chain through which the chain's facilities are linked to each other and to the products they want to produce,

which leads to work in two directions: reducing costs and increasing revenues generated, thus increasing profits and achieving a competitive advantage (Orosy, G., 2015). .

5. Blockchain (BC) technology: Block chain technology is a technology that activates many inter-cost management tools and achieves a reduction in the cost of data processing and manual procedures. It also reduces labor costs and improves product quality levels. It also increases the company's response speed. With the emerging changes, and also increasing the level of exchanging cost information and contributing to achieving an optimal product cost structure through the accuracy of information, reducing supply and waiting times, accuracy and quality, transparency and the inability of the data recorded in the blocks to be changed or tampered with, concealing the identity of dealers on the network, and proving transactions. In real time, due to the availability of a time imprint on the blocks, in addition to speed and efficiency, which leads to increasing the effectiveness of supply chains, improving the efficiency of various operations and activities, increasing the degree of integration and cooperation among its members, and then reducing the cost and achieving greater productivity for the company and the industrial cluster. (Saleh, et al., 2021) The application of the blockchain in tracking the supply chain contributes to activating the tools for managing the inter-cost of the supply chain, especially open records accounting and the target costing method, which includes overcoming the problem of lack of transparency, reducing the problem of information asymmetry between the parties of the supply chain, and supporting disclosure. The systematic and organized collection of information by all parties and the conclusion of smart contracts that include transparency and integrity of transactions (Saleh, et al., 2021), and tracking the supply chain using Blockchain technology leads to achieving many advantages, including (Al-Sagheer, 2017: 149-151)

1. Blockchain technology can contribute to increasing the efficiency and effectiveness of chain costs as a tool for building trust in the relationship between the facility, customers, suppliers, and all parties within the industrial cluster, as all transactions that take place between the parties of the supply chain are recorded in the form of blocks that are approved in real time.
2. The use of Blockchain in tracking the supply chain allows modeling and unifying data related to all along the chain within the industrial cluster, which increases the effectiveness of the design and also allows for the possibility of identifying cost savings arising from financing the performance of an activity from one party to another.
3. Paperwork in the traditional supply chain, which costs time and money, is not needed in the Blockchain.
4. Block chains enable a quick picture of the sources of raw materials and products and their movement between the parties of the chain, which prevents tampering and counterfeiting of raw materials and products.
5. Adopting block chain technology in supply chain management within the industrial cluster contributes to achieving many advantages for all parties of the supply chain by tracking raw materials from suppliers, manufacturing stages, and the wholesaler all the way to the customer.

Customer-related methods

1. Target Cost (TC):

The step of analyzing customer needs is the strategy on which the target costing method is based and the first pillar for achieving integration with the aim of activating intercost management, through which the main causes of customer behavior can be identified and then understanding and analyzing the motives for purchasing and interpreting both the positive or negative behavior of the customer towards the product (Abdul Majeed , et al., 2019), and the market research stage is the first step of the proposed framework with the aim of determining whether the product desired to be produced is feasible or not, and whether it needs to be modified in light of customers' needs, tastes, and financial capabilities, and then develop a preliminary vision for the specifications of the intended product. Its production, the required quality, and the appropriate price that the customer is willing to pay to obtain the expected value of the product, and when

this method is applied effectively, it helps to coordinate work between the industrial cluster facilities, starting with the process of designing and developing products and passing through those responsible for conducting market research and the suppliers dealing with the company (Chen , R. C. & Chung, C. H., 2002) and even its use by the customer.

Block chain technology: Block chain

Pradham believes that block chain technology supports the management of customer relationships through the private and public keys that customers have on the chain, which contribute to facilitating their transactions through the block chain, which helps in identifying their current and expected needs, which helps the company do the following: (Pradham, 2018 ; Holweg & Helo, 2014)

1. Modifying the purchasing behavior of unprofitable customers and reducing the cost of dealing with them.
2. Communicate with customers about products.
3. Managing orders with clients
4. Receive customer orders through the encryption process.
5. The customer can see and follow the stages of processing his order through the information shown by the block, such as operating times, date of order delivery, sources of raw materials used, the extent of the facility's honesty, and the accuracy of the data.

As for Al-Sagheer, he believes that block chain technology plays a fundamental role in providing information that contributes to analyzing the relationships between the facility's value-generating activities and value-generating activities through forward analysis of the value activities of distributors, retailers, and customers. It helps provide more information about the costs and revenues of each activity and supports chain management. Supply. (Al-Saghir, 2020: 156)

How the proposed framework works

From the previous figure presented in the framework, it is clear that the main controlling establishment is the one that leads the establishments associated with it (industrial cluster establishments are vertically linked). Often the main establishment is the one that sells the final product, and this establishment is the one that communicates with customers through the market research department that collects information about... The needs, requirements and desires of customers, as well as collecting information about competitors and competing products, meeting with suppliers and communicating this information to them to make modifications to the components of the products from all parties of the industrial cluster, whether in the design, manufacturing or marketing stage, and thus effectively managing inter-costs by applying appropriate methods to manage inter-costs to reach To the cost and competitive quality of each party in the industrial cluster supply chain by disclosing their data to enable effective management of inter-costs, which results in the production of products at the appropriate price, required quality, and on time, thus supporting the competitiveness of the industrial cluster facilities.

However, if the industrial cluster facilities are linked horizontally, where the inter-cost is managed between the industrial cluster facilities involved in the same production stage, then any number of supply chain facilities in the same production stage can cooperate with each other to achieve the greatest amount of cost savings for all participants. Cooperation or alliance Horizontal greatly affects the costs of cooperating facilities by participating in performing many activities collectively through the implementation of a single deal instead of multiple deals, standardized training and advertising, transportation costs, and the sharing of many fixed costs, research and development costs, and the costs of acquiring new technology. Which ultimately leads to increasing the competitiveness of the industrial cluster as a whole (Khairy, 2007), and methods of managing inter-costs play an effective role in reducing the costs of the industrial cluster and controlling them at all stages of the value chain within the industrial cluster, whether in the research,

development and design stage of the product (pre- Manufacturing) or in the manufacturing stage or after-sales stage. Through the horizontal or vertical relationships and links (front and back) of the methods of the proposed framework for managing the inter-costs of industrial cluster facilities, many advantages can be achieved through the integration of the methods of this framework, whether before the product manufacturing stage or In the manufacturing stage or in relation to relationships with suppliers and customers, including:

First: Reducing direct and indirect costs and transaction costs for industrial cluster facilities through: (Abdel Majeed, 2019)

- Reducing direct costs: which are the cost of raw materials, labor costs, and other direct costs, which many inter-cost management methods contribute to reducing, such as continuous improvement, value engineering, benchmarking, open records accounting, Internet of Things technology, block chain technology, and the cost method. On the basis of activity, cost schedules, trade-offs between price, function and quality, and value chain analysis, this is done by deleting some activities at the chain level as a whole that do not add value, merging some activities that can be transferred between some parties, and simplifying operations by reducing time. Examination and work to reduce the possibility of product failure in the market, reduce production time, and reduce product components that do not add value in a way that does not affect its quality.

- Reducing indirect costs: which are costs that support production costs and constitute a large portion of the cost without being directly involved in the production process, such as transportation costs, storage costs, and some human resource costs. An example of this is studying the level of technological performance required to implement the product to be produced through cooperation. Between suppliers and facilities within the industrial cluster, using the open records accounting method, determining the technological capabilities of the main facility and whether it matches the requirements of the required product, or does one of the facilities possess the required technology within the industrial cluster, or does the industrial cluster need to acquire this new technology to keep pace with market requirements, then make a comparison? between the cost of this technology and the targeted profit for the industrial cluster parties, and group discussions are also held for the cluster parties for the remaining indirect costs in order to reach the appropriate solutions for the lowest cost and highest performance and quality in order to achieve the overall benefit of all industrial cluster facilities. Through the method of open records and the block chain, the increase in Trust between the parties of the industrial cluster and horizontal cooperation between them by performing activities collectively and achieving internal savings by purchasing in large quantities for all cluster facilities, reducing training and advertising costs through standardized training and advertising, sharing fixed costs, cooperation in research and development costs, and sharing in acquisition costs. On modern technology.

- Reducing the costs of transactions (transactions): which include the costs of overlapping activities between the parties of the chain without leading to an increase in the direct or indirect costs mentioned above within the supply chain of industrial cluster facilities.

There is no doubt that the use of inter-cost management methods will contribute to supporting the facility's interaction with all parties of the chain, including its suppliers, customers, distributors, and others, to explore means of enhancing the efficiency of interconnected operations along the chain within the industrial cluster, which enables the rapid exchange of information and thus reduces costs and reduces the uncertainty that arises. It translates into cost savings that benefit various parties in the chain, enhances the value provided to the customer, and contributes to reducing storage costs and modifying design specifications, thus improving the value chain of the industrial cluster.

Second: Other advantages of integrating methods of managing the inter-costs of industrial cluster facilities: Such advantages include specialization and focus, reducing the time of the customer's turn, optimal exploitation of energies, increasing the speed of performance, increasing the quality of production and improving operations, benefiting from the experience of others, benefiting from advanced technology, increasing Productive and organizational flexibility, reducing customer waiting time, increasing customer

satisfaction and loyalty, increasing industrial relations with others, improving the quality of customer service, speed in responding to changes and developments in customer needs and desires, maximizing the customer's perceived value, achieving development and excellence, which ultimately reflects on all Small and medium enterprises within the industrial cluster in terms of:

1. Reducing the total costs along the supply chain in the industrial cluster to the lowest possible level.
2. Improving and raising the quality levels of products in the industrial cluster.
3. Improving profitability indicators within all parts of the industrial cluster.
4. Generating innovative designs that meet the needs and desires of all customers for industrial cluster products.
5. Rapid response to changes in customer tastes and demands within the industrial cluster.

The integration of methods for managing the inter-costs of industrial cluster facilities with the block chain also helps in the process of analyzing activities by providing blocks, which contain all information about all transactions within the chain, starting with the activities of the main facility and all the activities of customers, suppliers, distributors, wholesalers, and retailers along the chain in a manner Accurate and in real time without distortion or manipulation, which helps in identifying strengths, weaknesses, opportunities and threats, which is an important basis in the decision-making process (Blocher et al., 2010; Holweg & Helo, 2014). Through the process of analyzing activities across the block chain, information can be provided from the blocks and various strategic activities can be identified, including: (Al-Sagheer, 2017: 143)

1. Activities that perform differently from competitors.
2. Activities that achieve clear differentiation from competitors.
3. Activities with a value greater than the total operating costs.
4. Activities with different cost drivers for each activity, which enable identifying areas for potential reduction in activity costs, which enables the administrative accountant to tighten control over the drivers of operating costs, which contributes to reducing resource consumption, better exploiting the energies of all parties in the supply chain, and identifying and reflecting surplus activities. It depends on quality and cost.

Field study:

The field study aims to test the main research hypothesis, which is: the extent to which the integration of methods of the proposed framework for managing inter-costs contributes to reducing costs and increasing the competitiveness of industrial cluster establishments by testing a set of sub-hypotheses, each of which represents one of the dimensions of the proposed framework, and arriving at field evidence that supports those hypotheses in The Saudi business environment does not support it.

Statistical methods

The following statistical methods were used in this research: Kruskal-Wallis test

Descriptive statistical measurement based on statistical packages (SPSS) to describe the characteristics of the research sample and obtain arithmetic averages and standard deviations. The hypothetical arithmetic mean of (3) was relied upon as a standard for measuring and evaluating the score obtained by the respondents.

Kolmogorov-Smirnov test and Kruskal-Wallis test.

One-sample T-test to compare the calculated averages with the average tabular values applied in this research to test the extent to which the integration of the methods of the proposed framework for managing inter-costs contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in Saudi business establishments.

Study population and sample

The field study population consists of academics, management accountants, and information systems specialists due to the availability and diversity of experience and awareness they have. A random sample of (225) individuals was selected from the study population with (75) questionnaires for each category.

Statistical hypotheses for research

1. The integration of inter-cost management methods in the pre-manufacturing stage does not contribute fundamentally to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.
2. The integration of inter-cost management methods in the manufacturing stage does not contribute fundamentally to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.
3. The integration of methods for managing inter-costs associated with suppliers does not contribute fundamentally to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.
4. The integration of methods for managing inter-customer costs does not contribute fundamentally to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.
5. The integration of the methods of the proposed framework for managing inter-costs does not contribute substantially to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment.
6. There are no fundamental differences between the opinions of the respondents regarding the integration of the methods of the proposed framework for managing inter-costs in reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment.

Data collection method

Data collection was based on a survey form that took into account simplicity, clarity, and ease of understanding in its preparation. It was reviewed by a group of arbitrators specialized in accounting at universities until it was finalized. A five-point Likert scale was used, and (193) percent correct questionnaires were collected. (86%) of the total questionnaires, which is a good percentage for conducting statistical analysis. Table No. (1) displays the distribution of survey forms received from the study sample according to the sample categories, which was as follows:

Table No. (1) Distribution of survey forms received

From the study sample according to sample categories

Categories	Total number of questionnaires			Percentage of correct responses
	dispenser	received	Incorrect	

Academics	75	72	3	96%
Cost accountants and management accountants	75	54	21	72%
Information Systems Specialist	75	67	9	89%
Total	225	193	33	86%

The reliability of the questionnaire was according to Cronbach's alpha (0.91), which is an excellent percentage as it is higher than the acceptable percentage (60%). This means that there is a high degree of credibility in the answers to the questions.

Measuring the extent to which the integration of methods of the proposed framework for managing inter-costs contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment.

The extent to which the integration of the methods of the proposed framework for managing inter-related costs contributed to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment was measured through a questionnaire that included a set of statements that measure this. A five-point Likert scale was used to determine the weights of the statements, and to verify the validity of the research hypotheses, the following research question can be answered:

- To what extent does the integration of the methods of the proposed framework for managing intercosts contribute to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment?

The extent to which the integration of the methods of the proposed framework for managing interconnected costs contributed to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment was tested. The mean and standard deviation of the respondents' answers to the question posed by the researcher was calculated: Does the integration of the methods of the proposed framework for managing interconnected costs contribute to reducing Costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment? The general average of the answers related to each dimension of the proposed framework was calculated, and then the average weight of all averages was calculated using the One Sample T-Test (Tables 2-6).

Testing the field study hypotheses

The main research hypothesis was tested, which is, "The integration of the methods of the proposed framework for managing intercosts does not contribute substantially to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment." To verify the validity of the hypothesis, the following sub-hypotheses were tested:

1. The first hypothesis: The integration of inter-cost management methods in the pre-manufacturing stage does not contribute fundamentally to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.

Table No. (2) shows the results of the extent to which the integration of inter-cost management methods in the pre-manufacturing stage contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment through the arithmetic mean, standard deviation, one-sample T-test, and relative importance.

Table No. (2) Results of the extent to which the integration of inter-cost management methods in the pre-manufacturing stage contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment.

statement	Arithmetic mean	standard deviation	relative importance	calculated T value	Kolmogorov-Smirnov	significance level
1. The target costing method contributes to enhancing the competitive advantage of industrial cluster facilities	4.99	0.09	0.98	26.22	0.96	0.00
2. The method of matching price, quality, and functional value of the product contributes to enhancing the competitive advantage of industrial cluster facilities	4.95	0.10	0.97	26.22	0.96	0.00
3. The method of mutual cost examination contributes to enhancing the competitive advantage of industrial cluster facilities	4.95	0.09	0.98	26.22	0.96	0.00
4. The method of cost management in a simultaneous manner contributes to enhancing the competitive advantage of industrial cluster facilities	4.94	0.09	0.97	26.22	0.96	0.00
5. The cost schedule method contributes to enhancing the competitive advantage of industrial cluster facilities	4.92	0.09	0.97	26.22	0.96	0.00
Average	4.95	0.09	0.97	26.22	0.96	0.00

Table No. (2) shows that the arithmetic mean value of the extent to which the integration of inter-cost management methods in the pre-manufacturing stage contributes to reducing costs and increasing the competitiveness of industrial cluster establishments amounted to (4.95), compared to the hypothetical arithmetic mean of (3) as a standard for measuring and evaluating the degree obtained. As well as the results of the one-sample T-test and the results of the Kolmogorov-Smirnov test, which indicate that there are no fundamental differences between the sample items, the null hypothesis was rejected and the alternative hypothesis was accepted, which is: The integration of inter-cost management methods in the pre-manufacturing stage contributes fundamentally to reducing costs and increasing the competitiveness of enterprises. Industrial cluster in the Saudi business environment.

The second hypothesis: The integration of inter-cost management methods in the manufacturing stage does not contribute fundamentally to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.

Table No. (3) shows the results of the extent to which the integration of inter-cost management methods in the manufacturing stage contributes to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment through the arithmetic mean, standard deviation, one-sample T-test, and relative importance.

Table No. (3) Results of the extent to which the integration of inter-cost management methods in the manufacturing stage contributes to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.

statement	Arithmetic mean	standard deviation	relative importance	calculated T value	Kolmogorov-Smirnov	significance level
1.The continuous improvement method contributes to enhancing the competitive advantage of industrial cluster facilities	4.98	0.10	0.97	26.22	0.96	0.00
2.The just-in-time manufacturing system contributes to enhancing the competitive advantage of industrial cluster facilities	4.92	0.10	0.96	26.22	0.96	0.00
3.Benchmarking contributes to enhancing the competitive advantage of industrial cluster establishments	4.90	0.10	0.93	26.22	0.96	0.00
Average	4.93	0.10	0.95	26.22	0.96	0.00

It was shown from Table No. (3) that the value of the arithmetic mean of the extent to which the integration of inter-cost management methods in the manufacturing stage contributes to reducing costs and increasing the competitiveness of industrial cluster establishments amounted to (4.93), compared to the hypothetical arithmetic mean of (3) as a criterion for measuring and evaluating the degree obtained, as well as The results of the one-sample T-test and the results of the Kolmogorov-Smirnov test, which indicate that there are no significant differences between the sample items. The null was assumed and the alternative hypothesis was accepted, which is: The integration of inter-cost management methods in the manufacturing stage contributes fundamentally to reducing costs and increasing the competitiveness of industrial cluster facilities in an environmentally friendly environment. Saudi business..

The third hypothesis: The integration of methods for managing inter-costs associated with suppliers does not contribute fundamentally to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment.

Table No. (4) shows the results of the extent to which the integration of inter-cost management methods associated with suppliers contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment through the arithmetic mean, standard deviation, one-sample T-test, and relative importance.

Table No. (4) Results of the extent to which the integration of methods for managing inter-related costs associated with suppliers contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment

statement	Arithmetic mean	standard deviation	relative importance	calculated T value	Kolmogorov-Smirnov	significance level
1.The open records accounting method	4.99	0.10	0.98	26.22	0.96	0.00

contributes to enhancing the competitive advantage of industrial cluster facilities						
2.Internet of Things technology contributes to enhancing the competitive advantage of industrial cluster facilities	4.99	0.10	0.98	26.22	0.96	0.00
3.Block chain technology contributes to enhancing the competitive advantage of industrial cluster facilities	4.99	0.10	0.98	26.22	0.96	0.00
4.The activity-based costing method contributes to enhancing the competitive advantage of industrial cluster facilities	4.98	0.10	0.98	26.22	0.96	0.00
5.The cost schedule method contributes to enhancing the competitive advantage of industrial cluster facilities	4.97	0.10	0.96	26.22	0.96	0.00
Average	4.97	0.10	0.98	26.22	0.96	0.00

It was shown from Table No. (4) that the arithmetic mean value of the extent to which the integration of methods for managing inter-related costs associated with suppliers contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment amounted to (4.97), compared to the hypothetical arithmetic mean of (3) as a standard for measuring and evaluating the score obtained. Accordingly, as well as the results of the one-sample T-test and the results of the Kolmogorov-Smirnov test, which indicate that there are no significant differences between the sample items, the null hypothesis was rejected and the alternative hypothesis was accepted, which is: Integrating methods for managing inter-costs associated with suppliers contributes fundamentally to reducing costs and increasing the competitiveness of cluster establishments. Industrial in the Saudi business environment.

The fourth hypothesis: The integration of methods for managing inter-customer costs does not contribute fundamentally to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment.

Table No. (5) shows the results of the extent to which the integration of customer-related cost management methods contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment through the arithmetic mean, standard deviation, one-sample T-test, and relative importance.

Table No. (5) Results of the extent to which integration of customer-related cost management methods contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment

statement	Arithmetic mean	standard deviation	relative importance	calculated T value	Kolmogorov-Smirnov	significance level
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1.Block chain technology contributes to enhancing the competitive advantage of industrial cluster facilities	4.92	0.10	0.94	26.22	0.96	0.00
2.The target costing method contributes to reducing costs for industrial cluster facilities	4.92	0.10	0.94	26.22	0.96	0.00
Average	4.92	0.10	0.94	26.22	0.96	0.00

It was shown from Table No. (5) that the arithmetic mean value of the extent to which integration of customer-related cost management methods contributes to reducing costs and increasing the competitiveness of industrial cluster establishments amounted to (4.92), compared to the hypothetical arithmetic mean of (3) as a criterion for measuring and evaluating the score obtained, as well as the results of One-sample T-test and the results of the Kolmogorov-Smirnov test, which indicate that there are no significant differences between the sample items. The null hypothesis was rejected and the alternative hypothesis was accepted, which is: The integration of methods for managing inter-customer costs contributes fundamentally to reducing costs and increasing the competitiveness of industrial cluster establishments in the business environment. Saudi Arabia.

Fifth hypothesis: The integration of the methods of the proposed framework for managing inter-related costs does not contribute substantially to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment.

To measure the extent to which the integration of the methods of the proposed framework for managing inter-costs contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment, the general arithmetic mean of the extent to which the integration of the four dimensions of the proposed framework contributes, the standard deviation, relative importance, and a one-sample T-test for the sample under study and application were calculated. The results are as shown in Table (6).

Table No. (6) Results of the extent to which the integration of methods of the proposed framework for managing inter-costs contributes to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment

statement	Arithmetic mean	standard deviation	relative importance	calculated T value	Kolmogorov-Smirnov	significance level
The extent to which the integration of the methods of the proposed framework for managing inter-costs contributes to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.	4.94	0.10	0.96	26.22	0.96	0.00
Average	4.94	0.10	0.96	26.22	0.96	0.00

It is clear from Table No. (6) that the value of the general arithmetic mean of the extent to which the integration of methods of the proposed framework for managing inter-costs contributes to reducing costs and increasing the competitiveness of industrial cluster establishments amounted to (4.94), compared to the hypothetical arithmetic mean of (3) as a criterion for measuring and evaluating the score obtained, as well as The results of the one-sample T-test and the results of the Kolmogorov-Smirnov test, which indicate that there are no fundamental differences between the sample items, the null hypothesis was rejected and the alternative hypothesis was accepted, which is: The integration of the methods of the proposed framework for managing inter-costs contributes fundamentally to reducing costs and increasing the competitiveness of industrial cluster facilities in an environment Saudi business.

There are no fundamental differences between the opinions of the respondents regarding the integration of the methods of the proposed framework for managing inter-costs in reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment.

To measure the absence of fundamental differences between the opinions of the respondents, the Kruskal-Wallis Test was conducted to test the significance of the differences between the means of the three categories of respondents, and the results of the test were as shown in Table No. (7)

Categories	Number	Average Ranks	Degrees of Freedom	Ka ²	significance level
Academics	72	62.3	2	2.56	2.93
Cost accounting and management accountants	54	57.4			
Information systems specialist	67	60.1			
	193				

Table No. (7) shows the results of the discrepancy between the opinions of respondents in the three categories using the Kruskal-Wallis Test, where the value of K² was (2.56), which is less than the level of significance of (2.93), and from this it is clear that there is no difference between the opinions The research sample categories, and thus the opinions of the three categories of academics, cost accountants, management accountants, and information systems specialists were compatible, which supports the research results.

The extent to which the integration of the methods of the proposed framework for managing intercosts contributes to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment can be ranked according to the degree of relative importance, as shown in Table No. (8).

Table No. (8) Ranking of the extent to which the methods of the proposed framework for managing inter-related costs contribute to reducing costs and increasing the competitiveness of industrial cluster

s	Dimensions of the proposed frame	Arithmetic mean	relative importance	Ranking of relative importance
1	The contribution of inter-cost management methods in the pre-manufacturing stage to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment	4.95	0.97	2
2	The contribution of inter-cost management methods in the manufacturing stage to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.	4.93	0.95	3
3	The contribution of methods of managing inter-costs associated with suppliers to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.	4.97	0.98	1
4	The contribution of customer-related inter-cost management methods to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment.	4.92	0.94	4

establishments in the Saudi business environment.

It is clear from Table No. (8) that in terms of the relative importance of each dimension of the proposed framework, the methods of managing inter-costs associated with suppliers came in first place in terms of their contribution to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment, with an average of (4.97), and in The second ranking is methods for managing inter-costs in the pre-manufacturing stage in terms of their contribution to reducing costs and increasing the competitiveness of industrial cluster facilities in the Saudi business environment, with an average of (4.95). The third ranking is methods for managing inter-costs in the manufacturing stage in terms of their contribution to reducing costs and increasing... The competitive ability of industrial cluster establishments in the Saudi business environment, with an average of (4.93). Finally, in the fourth and last place were the methods of managing inter-costs associated with customers in terms of their contribution to reducing costs and increasing the competitive ability of industrial cluster establishments in the Saudi business environment, with an average of (4.92).

Summary and results of the research and suggestions for future research

First: Summary of the research

A framework has been built for the role of inter-cost management methods in reducing the costs of industrial cluster establishments and supporting their competitive capabilities in the Saudi business environment. The proposed framework is characterized by comprehensiveness, diversity and harmony among its elements, which work together to reduce the costs of industrial cluster establishments and support their competitive ability, and that the four dimensions of the framework are complementary to each other. Some work to reduce the costs of industrial cluster establishments. The extent to which the dimensions of the proposed framework contribute to reducing the costs of industrial cluster establishments and supporting their competitiveness in the Saudi business environment was also tested. The degrees of contribution of the dimensions of this framework were also arranged according to the degree of relative

importance in influencing the reduction of establishment costs. Industrial clusters and supporting their competitiveness in the Saudi business environment.

Search results

The results of the research can be presented in the following points:

1. Building a framework for the role of inter-cost management methods in reducing the costs of industrial cluster establishments and supporting their competitiveness in the Saudi business environment.
2. The dimensions of this framework are considered integrated and interconnected, which work together to reduce the costs of industrial cluster establishments and support their competitive ability, as the value of the general arithmetic mean of the extent to which the integration of the methods of the proposed framework for managing inter-costs contributes to reducing costs and increasing the competitive ability of industrial cluster establishments in the Saudi business environment (4.94) from (5).
3. The integration of the methods of the proposed framework for managing the inter-costs of industrial cluster facilities leads to achieving a waste-free supply chain and thus a waste-free production environment by improving internal manufacturing capabilities, working to reduce the time of completing tasks, achieving economies of scale for small units, reducing the cost of production, and flexibility in manufacturing and management. Information and communication between supply chain partners, improving productivity, increasing worker productivity, achieving better value for the customer, reducing waiting time and thus reducing the product life cycle, reducing inventory and its costs, improving quality, making good use of work space, making optimal use of equipment, and increasing customer and worker satisfaction.
4. In terms of the relative importance of each dimension of the proposed framework, in the first place is the contribution of methods of managing inter-costs associated with suppliers to reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment, with an average of (4.97) in terms of relative importance, and in the second place is the contribution Methods of managing inter-costs in the pre-manufacturing stage reduce costs and increase the competitive ability of industrial cluster facilities in the Saudi business environment with an average of (4.95). In the third place was the contribution of methods of managing inter-costs in the manufacturing stage to reducing costs and increasing the competitive ability of industrial cluster facilities in the environment. Saudi business with an average of (4.93), and finally the contribution of methods of managing inter-costs associated with suppliers in reducing costs and increasing the competitiveness of industrial cluster establishments in the Saudi business environment came in fourth and last place with an average of (4.92).
5. The Kruskal-Wallis Test was conducted and it was found that there was no difference between the opinions of the categories of the research sample, and thus the opinions of the three categories of academics, cost accountants, management accountants, and information systems specialists were compatible opinions, which supports the results of the research.
6. This study presented a proposed framework that had not been previously presented in any of the previous studies, and therefore the results of this study were different from the results of previous studies.

Proposals for future research

Based on the results of the research and through what was reviewed in previous studies, a group of future research can be proposed, for example, as follows:

1. Conducting applied studies to test the application of the framework for the role of inter-cost management methods in reducing the costs of industrial cluster establishments and supporting their competitiveness in the Saudi business environment or in business environments in other countries.

2. Research the impact of applying the value-based management philosophy on the strategic performance of economic institutions.
3. Examining the impact of applying the proposed framework for the role of inter-cost management methods in reducing the costs of industrial cluster establishments on the performance in those establishments.
4. Conduct further studies to develop the proposed framework in light of developments in the changing business environment.

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