Productivity Management of Construction Companies: Investment Holdings of the Bank Keshavarzi of Iran Fund

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Abstract:

This research investigates productivity management within the construction company, addressing the critical need for centralized and integrated systems in project-oriented organizations. The study adopted a case study approach, focusing on 15 construction companies within Tadbir Holding, with a statistical population of 80 senior managers and technical experts in Tehran. Data was collected using a questionnaire incorporating the Patterson Job Performance Questionnaire and Porter Organizational Commitment Questionnaire. Data analysis was conducted using SPSS16 software. The results show that "Organizational Effectiveness" was the highest-ranked basic factor (mean rank 5.505), while "Synergistic Utilization of Internal Resources and Capabilities" was the lowest (mean rank 5.499). Among sub-factors, "Level of implementation and adherence to a common set of values, beliefs, and norms across all construction companies within the organization" was prioritized highest (mean rank 4.92). Statistical analysis using single-sample T-tests (95% probability) supported all hypotheses, indicating that productivity management can advance goals, and construction companies influence other investment and construction holding companies. These findings underscore the importance of fostering a strong organizational culture and ensuring effective support from the holding company to enhance overall productivity within the construction sector. The findings reveal that enhancing synergy among holding subsidiaries, securing financing for construction companies through holding company capital, employing highly adaptable

managers, fostering a rich and impactful organizational culture within the complex, and actively implementing these strategies can effectively manage productivity within construction companies. This, in turn, contributes to increased productivity across the entire holding system.

Keyword: Productivity management; Investment holdings; Bank Keshavarzi of Iran, Data analysis; Construction companies.

1. Introduction

1.1. General

Project-oriented organizations increasingly require centralized and integrated systems [1]. These systems must not only evaluate and select individual projects but also effectively manage the interdependencies between them [2]. Such interdependencies include shared resource utilization, prerequisite compliance, and alignment with organizational strategic goals [3]. This critical need has long been a significant concern for managers and senior officials.

Today, across a wide spectrum of commercial, manufacturing, and service activities, most institutions and business units leverage external development to achieve their objectives [4]. A primary strategy for many of these companies involves acquiring other companies, often within similar industries, to establish specialized groups and realize associated benefits [5].

In Iran, such entities are recognized as financial institutions under Article 4 of the Executive Regulations of the Securities Market Law and are classified as holding companies or specialized parent companies [6-8]. Given numerous structural and administrative challenges, a lack of strategic vision within many large Iranian organizations, and the pressures of rapid technological advancements, fierce global competition, and dynamic industry shifts, coupled with the imperative for privatization, the adoption of holding structures in Iran appears increasingly necessary [9].

A holding company, or parent company, is defined as an entity that holds shares in other companies [10, 11]. Specifically, a parent company owns a significant portion of another company's shares, thereby exerting control over its operations and influencing its productivity [12, 13].

1.2. Definition of holding company

According to Lynch (2006), a holding company is an entity that owns various businesses. As an investor, it typically holds a majority stake in several different companies, aiming to achieve its objectives through the strategic management of these subsidiaries [14].

In a study by Ficbauer and Režňáková (2014), the objectives of establishing holding companies and their mutual benefits were analyzed. Their research explored the extent to which relationships between companies influence each other's performance, suggesting that the primary benefits of holding companies lie in redefining shareholder investment risk and improving the performance of subsidiary companies [15].

Holding companies differ in nature from large, single-business corporations. They provide support, guidance, and control to their subsidiaries through the implementation of specific policies related to products and services [16]. Synergy within holding companies implies that the holding company strives to achieve overall organizational profitability and performance that exceeds the combined profitability and performance of its individual subsidiaries [17].

The core strategic philosophy for holding companies centers on the effective management of their subsidiary companies [10, 18, 19]. Holding value creation is evident when the holding company's actions enhance the effectiveness of its subsidiaries' operations. Value is created when the holding company manages its subsidiaries more effectively than they could achieve independently [20]. Therefore, focusing on value creation can be considered a crucial strategy for the success of holding companies. Table 1 presents studies conducted on methods of productivity in construction firms, extracted from reputable scientific databases.

Table 1. Literature review of methods of productivity in firms

Publication	References	Methods of Productivity in Firms
Elsevier, Emerald, Springer, Taylor & Francis, ASCE	[21, 22]	Causal inference approach to evaluate the impact of prefabrication policies
	[23, 24]	Analysis of changes in firm productivity levels.
	[25, 26]	Used for statistical verification of productivity estimates
	[27, 28]	The role of firm size and potential crowding-out effects.
	[29, 30]	Literature review and statistical analysis
	[31]	Structured interview with 25 ERP users working
	[32, 33]	Theoretical frameworks, expert opinions, quantitative data collection, and qualitative case studies
	[34]	Empirical data from industry surveys with expert knowledge
	[35]	valuable qualitative insights into the experiences and perspectives of experienced CM professionals
	[36, 37]	Quantitative assessment of the perceived importance of various factors
	[38]	Qualitative insights into the experiences and perspectives of small construction firms
	[39, 40]	A novel Method Productivity Delay Model (MPDM)
	[41, 42]	Critical analysis of current operational processes and risk management
	[43]	Generalized Method of Moments (GMM) estimator
	[44, 45]	Mixed-methods approach, combining expert input with a pilot study to develop and validate a standardized framework
	[46]	A conceptual framework to address the challenges of the fragmented construction supply chain
	[47]	Quantitative assessment of the efficiency and productivity in three major Asian economies

1.۳. Productivity management

Based on the objectives and findings of this study, as well as related research in the field, productivity can be defined by the following key characteristics [15, 48, 49]:

1. Effectiveness and efficiency: It encompasses the effectiveness and efficiency of operations, aiming to advance organizational goals and enhance overall performance.
2. Multifactorial influence: It is an aspect that can be influenced by various internal and external factors.
3. Enhancement strategies: It can be "enhanced" and "increased" through strategic interventions such as fostering a strong organizational culture, ensuring effective support from the holding company,

enhancing synergy among subsidiaries, securing appropriate financing, and employing adaptable managers.

4. Goal achievement: It reflects the ability of organizations to achieve their established goals and vision.
5. Measurability and management: It is a concept that can be measured and strategically managed to advance organizational objectives.
6. Inter-organizational impact: It can be increased by integrating construction companies into investment holdings and by leveraging the positive impact of other subsidiaries within a holding company.

1.٤. Research scope and objective

This study addresses the challenge of effectively managing productivity within construction companies operating under an investment holding by investigating influential factors, analyzing obstacles, and proposing solutions to improve overall efficiency and achieve organizational objectives. This research seeks to identify the key internal and external factors influencing the productivity of construction companies within an investment holding, particularly Tadbir Bank Keshavarzi Holding, and concurrently, to analyze how the interrelationships, synergies, and mutual influences among the holding's diverse subsidiaries impact the productivity of its construction sector. Furthermore, the study aims to determine the primary obstacles hindering progress, productivity, and profitability within these entities, ultimately proposing effective solutions and strategies to enhance productivity and enable Tadbir Bank Keshavarzi Holding to achieve its established goals and vision.

2. Research Method

The methodology for developing the questionnaire items and identifying key variables in this study involved several steps:

Literature Reviews: The study incorporated insights from existing literature on productivity in construction firms. This included reviewing various studies, such as those employing causal inference approaches, analyses of firm productivity levels, statistical verification of productivity estimates, and examinations of firm size and crowding-out effects.

Surveys: Surveys were conducted to gather necessary data.

Expert Opinions: Expert opinions were sought to inform the development of the questionnaire. This process included interviews with senior managers and technical experts from the selected companies. Content experts and subject matter specialists reviewed the questionnaire, and their feedback and suggested modifications were incorporated to enhance its validity.

Questionnaire Development: A two-part questionnaire was developed. This questionnaire integrated the Patterson Job Performance Questionnaire and the Porter Organizational Commitment Questionnaire. It used a closed-ended format with a five-point Likert scale.

Key Variables and Sub-factors: The core questions of the questionnaire assessed 60 sub-factors grouped into six main areas, which served as the key variables:

Productivity Management; Impact of Construction Companies; Interaction of Construction Companies; Management Model; Applications of Construction Companies; Increasing Productivity.

Figure 1 shows the research stages.

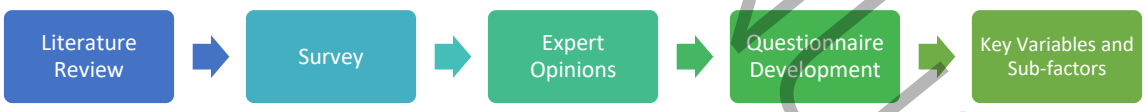

Fig. 1. Research stages

2.1. Statistical population

This research focuses on productivity management within investment holdings, specifically examining construction companies operating as subsidiaries within these structures. Due to limitations in accessing

comprehensive information from a wide array of holdings and the broad scope of the investment holding sector, this study adopts a case study approach, focusing specifically on Tadbir Holding.

Tadbir Holding encompasses a diverse portfolio of companies across various industries, including construction, trading, manufacturing, leasing, insurance, human resources, information technology, and security. This research primarily investigates the construction companies within Tadbir Holding and analyzes the influence and impact of other holding subsidiaries on their operations. The study includes companies with at least four years of operational history in their registered fields of activity.

To conduct this research, subsidiaries of Tadbir Bank Keshavarzi Holding headquartered in Tehran were selected. To enhance research efficiency, data were collected through interviews with, and questionnaires administered to, senior managers and technical experts from these companies. This study encompasses 15 companies, with a statistical population of 80 individuals, comprising senior managers and technical experts.

As a descriptive survey, the research employs a questionnaire to gather data and information relevant to the research questions and hypotheses. The questionnaire used in this study integrates the Patterson Job Performance Questionnaire and the Porter Organizational Commitment Questionnaire. Both utilize a closed-ended format with a five-point Likert scale and consist of two parts:

1. Demographics: This section collects information on personal characteristics such as educational qualifications, years of service, organizational position, and gender.
2. Core Questions: This section utilizes 60 sub-factors to assess:
   - Productivity Management: sub-factors 1-10.
   - Impact of Construction Companies: sub-factors 11-20.
   - Interaction of Construction Companies: sub-factors 21-30.
   - Management Model: sub-factors 31-40.

- Applications of Construction Companies: sub-factors 41-50.
- Increasing Productivity: sub-factors 51-60, focusing on strategies to enhance the productivity of construction companies through other subsidiaries of the holding.

The questionnaire underwent rigorous content validity assessment. Expert judgment was sought to ensure that the selected questions were representative of the entire domain and accurately measured the intended constructs. This involved evaluating the coverage and suitability of the questions in relation to the research objectives. The questionnaire was reviewed by content experts and relevant subject matter specialists. Their feedback, including suggested changes and modifications, was incorporated to enhance the questionnaire's validity. To ensure the reliability and trustworthiness of the questionnaire, Cronbach's alpha coefficient was calculated using SPSS 16 statistical software.

3. Data Analysis

This study assessed the reliability and trustworthiness of the research instrument using Cronbach's alpha. As a coefficient ranging from 0 to 1, Cronbach's alpha indicates a scale's internal consistency, with values closer to 1 signifying greater reliability. Cronbach's alpha was calculated separately for each factor within the questionnaire to assess their individual reliability. Additionally, the overall Cronbach's alpha for the entire questionnaire was computed using SPSS software. The results demonstrated acceptable reliability for all parts of the questionnaire, with Cronbach's alpha values exceeding 0.7.

Pearson's correlation test was then employed to determine the relationships between the research variables. This analysis was conducted separately for each of the six parts of the questionnaire using SPSS software, confirming the presence of significant correlations.

3.1. Ranking of research variables

To prioritize and rank each research variable, the Friedman test was employed. Data analysis and result extraction were conducted using SPSS software. Tables 2 to 7 present the Friedman test results for variables within sections one to six of the questionnaire, respectively, providing the analysis for ranking the factor variables.

The dependent variable in this study is the productivity of construction companies within investment holdings. The independent variables include:

- Organizational effectiveness
- Synergistic utilization of internal resources and capabilities
- Synergistic collaboration and inter-organizational cooperation
- The unique challenges and complexities of managing a holding company
- Strategic value of an internal construction company within a holding company
- Inter-company collaboration and resource sharing within the holding company

Table 2 specifically presents the results of the variable ranking analysis for the first factor. According to this table, sub-factor 1 was assigned the highest priority, while sub-factor 10 received the lowest priority.

Table 2. Ranking of sub-factors for the first factor from the first part of the questionnaire

Factor 1: Organizational Effectiveness			
Sub-factors	**Rank**	**Mean rank**	**Code**
The impact of the holding company's guidelines and regulations on the construction company's performance.	۱	۶.۲۹	Q1
The impact of employee engagement and willingness to discuss workplace organization with external parties.	۲	۵.۹۱	Q2
The impact of synergistic relationships between the construction company and the holding company.	۷	۵.۸۰	Q3
The impact of improved interdepartmental collaboration within the organization.	۳	۵.۶۶	Q4
The impact of employee responsibility and loyalty on organizational performance.	۴	۵.۵۸	Q5
The impact of creating a positive and motivating work environment on organizational goals.	۶	۵.۵۶	Q6
The impact of employee empowerment and innovation on organizational efficiency.	۹	۵.۱۷	Q7
The impact of intellectual property protection on organizational competitiveness.	۵	۵.۱۴	Q8
The impact of strategic flexibility and adaptability on organizational performance in a dynamic environment.	۸	۵.۰۷	Q9
The impact of competitive failures in the market on the organization's market share and profitability.	۱۰	۴.۸۳	Q10

Table 3 presents the results of the variable ranking analysis for the second factor. According to the table, sub-factor 12 was assigned the highest priority, while sub-factor 11 received the lowest priority.

Table 3. Ranking of sub-factors for the second factor from the second part of the questionnaire

Factor 2: Synergistic Utilization of Internal Resources and Capabilities			
Sub-factors	**Rank**	**Mean rank**	**Code**
Utilization rate of financial consulting services provided by subsidiary companies within construction companies.	۱۰	۶,۰۳	Q11
Utilization rate of internal audit services provided by subsidiary companies within construction companies.	۱	۵,۸۴	Q12
Utilization rate of investment services provided by subsidiary companies within construction companies.	۲	۵,۶۹	Q13
Utilization rate of insurance services provided by subsidiary companies within construction companies.	۹	۵,۶۷	Q14
Utilization rate of information technology (IT) services provided by subsidiary companies within construction companies.	۷	۵,۵۲	Q15
Utilization rate of human resources and contract management services provided by subsidiary companies within construction companies.	۵	۵,۴۸	Q16
Utilization rate of aviation services provided by subsidiary companies within construction companies.	۳	۵,۴۳	Q17
Utilization rate of tourism and recreation services provided by subsidiary companies within construction companies.	۸	۵,۴۴	Q18
Utilization rate of legal services provided by subsidiary companies within construction companies.	۶	۵,۲۰	Q19
Utilization rate of computer services provided by subsidiary companies within construction companies.	۴	۴,۶۸	Q20

Table ٤ presents the results of the variable ranking analysis for the third factor. According to the table, sub-factor ٢٩ was assigned the highest priority, while sub-factor ٢٣ received the lowest priority.

Table 4. Ranking of sub-factors for the third factor from the third part of the questionnaire

Factor 3: Synergistic Collaboration and Inter-organizational Cooperation			
Sub-factors	**Rank**	**Mean rank**	**Code**
Extent of collaborative efforts for rapid organizational progress.	۷	۶,۹۴	Q21
Level of leveraging knowledge, skills, and specialized forces within and across companies within the organization.	۵	۶,۷۳	Q22
Degree of combined effort that produces a greater result than the sum of individual contributions among construction companies.	۱۰	۵,۵۳	Q23
Frequency and effectiveness of utilizing services offered by other construction companies within the organization for projects.	۸	۵,۴۸	Q24
Extent to which work is sourced internally within the organization to retain profits and minimize reliance on external companies.	۶	۵,۳۶	Q25
Level of support provided to construction companies within the organization for acquiring new projects through introductions and marketing efforts.	۴	۵,۳۴	Q26
Degree of trust fostered among construction companies due to the organization's integrated structure.	۳	۵,۰۳	Q27
Extent to which construction companies within the organization share equipment and machinery to enhance operational efficiency.	۹	۴,۹۲	Q28
Level of implementation and adherence to a common set of values, beliefs, and norms across all construction companies within the organization.	۱	۴,۹۲	Q29
Quality of relationships and communication between senior managers of the construction companies within the organization.	۲	۴,۷۶	Q30

Table 5 presents the results of the variable ranking analysis for the fourth factor. According to the table, sub-factor 31 was assigned the highest priority, while sub-factor 35 received the lowest priority.

Table ۵. Ranking of sub-factors for the fourth factor from the fourth part of the questionnaire

Factor 4: The Unique Challenges and Complexities of Managing a Holding Company			
Sub-factors	**Rank**	**Mean rank**	**Code**
Holding company management is more complex due to its diverse operations and subsidiaries.	۱	۶/۴۳	Q31
Holding companies, with their wider range of services, are more diverse than typical companies.	۳	۶/۰۳	Q32
Holding company diversification reduces overall risk compared to single-industry companies.	۵	۶/۰۱	Q33
Holding companies require managers with higher scientific literacy to navigate their complex business ecosystem.	۸	۶/۰۱	Q34
Holding companies require multi-dimensional management across diverse subsidiaries.	۱۰	۵/۷۳	Q35
Holding companies integrate investment activities into subsidiary management for a more strategic approach.	۷	۵/۲۹	Q36
Strong organizational culture is crucial for holding companies to foster collaboration across subsidiaries.	۹	۵/۰۹	Q37
Holding company leadership requires exceptional vision and the ability to guide diverse subsidiaries.	۶	۴/۸۵	Q38
Holding company managers require a broader range of expertise across various fields, including finance, strategy, operations, and human resources, to effectively oversee the diverse operations of their subsidiaries.	۴	۴/۸۲	Q39
The dynamic and evolving nature of a holding company environment necessitates greater flexibility and adaptability from managers compared to the often more predictable and stable operating environments of ordinary companies.	۲	۴/۷۵	Q40

Table 6 presents the results of the variable ranking analysis for the fifth factor. According to the table, sub-factor 47 was assigned the highest priority, while sub-factor 44 received the lowest priority.

Table 6. Ranking of sub-factors for the fifth factor from the fifth part of the questionnaire

Factor 5: Strategic Value of an Internal Construction Company within a Holding Company			
Sub-factors	**Rank**	**Mean rank**	**Code**
The ability of the holding company's internal construction company to directly execute construction projects without the need for external supervision and oversight.	۳	۶.۵۲	Q41
The provision of timely and cost-free construction-related consulting services by the internal construction company to the holding company.	۴	۶.۴۴	Q42
Establishing the internal construction company as the holding company's trusted partner for all construction investments.	۸	۶.۳۱	Q43
The implementation of effective supervision and monitoring of all construction and real estate investments undertaken by the holding company.	۱۰	۶.۰۱	Q44
Active assistance provided by the internal construction company to the holding company in the successful execution of its overall construction strategies.	۵	۵.۵۷	Q45
The extent to which the construction company effectively aligns its operations and project execution with the competitive strategies of the holding company.	۲	۵.۳۹	Q46
The holding company's rapid market response in construction is facilitated by its internal construction capabilities.	۱	۴.۸۳	Q47
The meticulous management of the holding company's real estate assets, ensuring compliance with all relevant technical and safety standards.	۷	۴.۶۸	Q48
The development and execution of high-profit construction projects that generate significant returns for the holding company.	۹	۴.۶۴	Q49
The implementation of effective pricing strategies and efficient sales processes for the holding company's land and buildings.	۶	۴.۶۱	Q50

Table 7 presents the results of the variable ranking analysis for the sixth factor. According to the table, sub-factor 47 was assigned the highest priority, while sub-factor 44 received the lowest priority.

Table 7. Ranking of sub-factors for the sixth factor from the sixth part of the questionnaire

Factor 6: Inter-company Collaboration and Resource Sharing within the Holding Company

Sub-factors	Rank	Mean rank	Code
Extent of utilization of construction company consulting services by other subsidiaries in areas such as property purchasing and leasing.	۲	6.55	Q51
Extent of leveraging construction company expertise for investment decisions by other subsidiaries.	۴	6.14	Q52
Extent of utilizing construction company consulting services during the planning and execution of construction projects by other subsidiaries.	۸	6.08	Q53
Extent of utilizing construction company services for fulfilling contracting needs of other subsidiaries.	۱۰	5.91	Q54
Provision of proposals to construction companies for participation in construction projects by providing necessary capital from other subsidiaries.	۶	5.69	Q55
Marketing and introducing the construction company to potential clients and partners through the efforts of other subsidiaries.	۷	5.36	Q56
Extent to which subsidiary companies provide services to the construction company at the lowest possible cost and within the shortest possible timeframe.	۳	5.18	Q57
Extent of legal support required by the construction company for entering new markets and navigating regulatory challenges.	۵	5.01	Q58
Provision of direct financial support to the construction company through mechanisms such as interest-free loans.	۹	4.91	Q59
Extent of the holding company's ability to provide the construction company with the necessary financial resources and stability to support its operations and growth.	۱	4.18	Q60

The six basic factors of the questionnaire are ranked according to Table 8. The ranking reflects the relative importance of each factor, with higher average rankings indicating greater importance. According to Table 8, the first factor has the highest rank, while the second factor has the lowest.

Table 8. Prioritization of the basic factors of the questionnaire

Main Factors	Mean rank
Factor 1	۵.۵۰۵
Factor 4	۵.۵۰۴
Factor 3	۵.۵۰۳
Factor 6	۵.۵۰۱
Factor 5	۵.۵۰۰
Factor 2	۵.۴۹۹

4. Results

4.1. Ranking of sub-factors

Factor 1: Organizational Effectiveness

- Sub-factor 1, "The impact of the holding company's guidelines and regulations on the construction company's performance," was assigned the highest priority with a mean rank of 6.29.
- Sub-factor 10, "The impact of competitive failures in the market on the organization's market share and profitability," received the lowest priority with a mean rank of 4.83.

- Factor 2: Synergistic Utilization of Internal Resources and Capabilities
    - Sub-factor 12, "Utilization rate of internal audit services provided by subsidiary companies within construction companies," was assigned the highest priority with a mean rank of 5.84.
    - Sub-factor 11, "Utilization rate of financial consulting services provided by subsidiary companies within construction companies," received the lowest priority with a mean rank of 6.03.
- Factor 3: Synergistic Collaboration and Inter-organizational Cooperation
    - Sub-factor 29, "Level of implementation and adherence to a common set of values, beliefs, and norms across all construction companies within the organization," was assigned the highest priority with a mean rank of 4.92.
    - Sub-factor 23, "Degree of combined effort that produces a greater result than the sum of individual contributions among construction companies," received the lowest priority with a mean rank of 5.53.
- Factor 4: The Unique Challenges and Complexities of Managing a Holding Company
    - Sub-factor 31, "Holding company management is more complex due to its diverse operations and subsidiaries," was assigned the highest priority with a mean rank of 6.43.
    - Sub-factor 35, "Holding companies require multi-dimensional management across diverse subsidiaries," received the lowest priority with a mean rank of 5.73.
- Factor 5: Strategic Value of an Internal Construction Company within a Holding Company
    - Sub-factor 47, "The holding company's rapid market response in construction is facilitated by its internal construction capabilities," was assigned the highest priority with a mean rank of 4.83.
    - Sub-factor 44, "The implementation of effective supervision and monitoring of all construction and real estate investments undertaken by the holding company," received the lowest priority with a mean rank of 6.01.

- Factor 6: Inter-company Collaboration and Resource Sharing within the Holding Company
    - Sub-factor 60, "Extent of the holding company's ability to provide the construction company with the necessary financial resources and stability to support its operations and growth," was assigned the highest priority with a mean rank of 4.18.
    - Sub-factor 54, "Extent of utilizing construction company services for fulfilling contracting needs of other subsidiaries," received the lowest priority with a mean rank of 5.91.

4.2. Prioritization of basic factors

The six basic factors of the questionnaire were ranked, with higher average rankings indicating greater importance.

- Factor 1 (Organizational Effectiveness) has the highest rank with a mean rank of 5.505.
- Factor 4 (The Unique Challenges and Complexities of Managing a Holding Company) follows with a mean rank of 5.504.
- Factor 3 (Synergistic Collaboration and Inter-organizational Cooperation) is ranked third with a mean rank of 5.503.
- Factor 6 (Inter-company Collaboration and Resource Sharing within the Holding Company) is fourth with a mean rank of 5.501.
- Factor 5 (Strategic Value of an Internal Construction Company within a Holding Company) is ranked fifth with a mean rank of 5.500.
- Factor 2 (Synergistic Utilization of Internal Resources and Capabilities) has the lowest rank among the main factors with a mean rank of 5.499.

5. Findings and Discussion

According to the output from the table for the overall ranking of the regulatory questionnaire's sub-factors, sub-factor 29 (the degree of implementation of a common organizational culture) ranks highest and is related to factor number three. Conversely, sub-factors 30 (the degree of relationship between senior managers of construction companies), 60 (the degree of ability to provide financial resources and financial stability of construction companies by the holding), 47 (the rapid response of the holding to the demand of the construction market), and 46 (the degree of implementation of the holding's competitive strategies in the construction fields by the construction company) rank lower within the top five sub-factors, all related to factor number five.

These high-ranking sub-factors suggest that organizational culture is foundational to any organization**.** Without establishing and implementing a strong organizational culture, significant progress is unlikely. Another noteworthy point is the parent company's (holding's) ability to support its subsidiaries**.** The holding can provide this support in several ways: firstly, by offering necessary financing; and secondly, by providing relevant projects to ensure continued growth and success. This comprehensive support not only increases the productivity of the subsidiaries but also enhances the overall productivity of the entire organization, enabling effective productivity management.

Referring to the ranking table of basic factors, the first factor, productivity management, holds the highest rank. This indicates that managing company productivity can effectively advance organizational goals and establish the necessary infrastructure for increasing overall organizational productivity.

5.1. Interview

Following the required outputs from the collections and rankings, the results of an interview conducted with five technical researchers were presented, revealing the following:

Following discussions and exchanges on organizational culture, the final suggestion is that the holding company should institutionalize an integrated and applicable organizational culture across all its subsidiary

companies. Establishing such a unified culture will foster balance and equilibrium within the companies, directly leading to increased human resource productivity. This is because creating equitable conditions for all personnel cultivates a more just and motivating work environment. Furthermore, the positive impact of this integrated culture will extend beyond human resource productivity, benefiting other areas of the organization as well.

Regarding the holding company's support for its subsidiaries, particularly construction companies, the current level fell short of expectations. A key suggestion, unanimously supported by all technical experts, was for the holding company to act as a financial arm for its subsidiaries, providing them with necessary financial resources. This approach would empower the holding company, as the parent entity, to enhance the financial strength of its subsidiaries by increasing capital and extending intra-organizational loans. Such support would enable subsidiaries, including construction companies, to sustain their operations and achieve continued progress, especially in the face of challenging economic conditions and escalating construction costs.

The holding company, as a large and well-known investment group, is capable of leveraging its support to acquire major projects. These projects can then be assigned to its subsidiaries for implementation, thereby enhancing their efficiency and productivity. This approach not only drives profitability for the subsidiaries but also contributes to increased productivity and overall organizational success.

To clarify activities and define the primary scope of each subsidiary company, it is proposed that each company develop and submit a comprehensive business model. This will enable the holding company to review these models, ascertain the primary goals of each subsidiary, and subsequently develop strategic plans to achieve those goals.

Experts attributed the lack of sufficient progress primarily to mismanagement, instability within the management department, and frequent managerial transfers. They noted that over the past three years, the

holding company's top management had changed four times, leading to fundamental shifts across all subordinate departments. These successive changes severely disrupted the organization's ability to achieve its primary goals. Each new manager often introduced individual perspectives and lacked commitment to the group's established organizational culture, resulting in the implementation of personal agendas rather than a unified vision. Therefore, the experts recommended establishing a stable management unit with long-term goals and a strong focus on achieving high productivity targets.

5.2. Description of statistical tests related to hypotheses and research questions

This section presents the results of statistical tests related to the research hypotheses and questions. The study posed three hypotheses and three research questions, which were analyzed using descriptive and inferential statistical methods. The results of the hypothesis and question tests are presented below. To test these hypothesizes, a single-sample T-test was conducted using SPSS software. The results supported the hypothesizes with a 95% probability.

1) The first hypothesis of this research stated that "Transactions can be managed in order to advance the goals." This indicates that the statistical population generally agreed that managing the productivity of construction companies within investment holdings could effectively advance their goals.

2) The second hypothesis of this study examined "the influence of construction companies on other investment holding companies." This indicates that the statistical population generally agreed that construction companies have an influence on other investment holding companies.

3) The third hypothesis of this research examined "the influence of construction companies on other construction holding companies." This indicates that the statistical population generally agreed that construction companies have an influence on other construction holding companies.

4) The first research question addressed whether the management of holding companies differs from that of ordinary companies. This indicates that the statistical population generally agreed that the management of holding companies is different from that of ordinary companies.

5) The second research question investigated whether adding construction companies to investment holdings increases productivity. The results of the analysis support the hypothesis that adding construction companies to investment holdings does indeed increase productivity.

This means that with a probability of 95%, the second question, "Does the addition of construction companies to investment holdings increase productivity?" is confirmed. Therefore, it can be stated that the people of the statistical population agreed that adding construction companies to investment holdings increases productivity.

6) The third research question explored whether other subsidiaries within a holding company can enhance the productivity of the holding company's construction companies. The results of the analysis support the hypothesis that the presence of other subsidiaries indeed positively impacts the productivity of the holding company's construction businesses. This means that the third question, "Can other holding company subsidiaries increase the productivity of the holding company’s construction companies?" is confirmed with a probability of 95%. Therefore, it can be stated that the statistical population agreed that other investment holding company subsidiaries increase the productivity of the holding company’s construction companies.

5.3. Contribution and novelty of the study

Here are the key aspects contributing to its novelty:

1) Focus on Investment Holdings and Construction Companies: While productivity in construction and the concept of holding companies have been studied, this research specifically investigates the productivity

management of construction companies within an investment holding. This is a niche area that adds complexity due to the diverse portfolio and interdependencies within a holding structure.

2) Case Study of Tadbir Holding in Iran: The study adopts a case study approach, focusing on Tadbir Holding in Iran. This provides unique insights into the challenges and dynamics of such organizations within the Iranian economic and business landscape, which may differ significantly from other regions due to specific structural, administrative, and technological pressures.

3) Analysis of Intra-Holding Synergies and Influences: A significant novel aspect is the exploration of "relationships, synergies, and mutual influences among these subsidiaries on the construction companies" within the holding. This goes beyond examining individual company productivity to analyze how the broader holding ecosystem impacts its construction arms.

4) Identification of Specific Ranked Factors and Sub-factors within the Holding Context: The study's detailed ranking of main factors (e.g., "Organizational Effectiveness" as highest) and sub-factors (e.g., "the degree of implementation of a common organizational culture" as highest) specifically within the context of an investment holding managing construction entities offers novel empirical data and prioritization.

5) Practical Implications for Holding Company Management: The research provides concrete recommendations, such as the institutionalization of an integrated organizational culture and the holding company acting as a financial arm for its subsidiaries, derived directly from the findings within this specific context. These are practical implications tailored to the unique challenges of managing productivity across diverse subsidiaries in a holding company.

6) Emphasis on Dynamic Management and Adaptability: The expert interviews highlighted the critical issue of management instability and frequent changes within the holding, and the need for stable, long-term-oriented management and adaptable managers. This reinforces the unique managerial complexities inherent in diversified holding companies.

6. Conclusion

This research aimed to enhance productivity management within Tadbir Bank Keshavarzi Holding's construction company by identifying key internal and external factors. Utilizing the Delphi method and a descriptive-analytical approach, the study analyzed influential factors and explored potential solutions for improvement. Key findings include:

- Organizational Culture: A strong and well-implemented organizational culture is crucial for overall organizational success, including productivity enhancement.
- Holding Company Support: The holding company plays a vital role in supporting its subsidiaries through financial resources, project allocation, and market responsiveness.
- Productivity Management: Effective productivity management is essential for achieving organizational goals and enhancing overall organizational efficiency.
- Positive Influence of Construction Companies: Construction companies within investment holdings positively influence other holding companies and contribute to increased overall productivity.

The research limitations in this study are primarily related to its scope and data collection. The study adopts a case study approach, specifically focusing on Tadbir Holding, due to limitations in accessing information from numerous holdings and the broad scope of the investment holding sector. Additionally, while the study utilizes surveys and expert opinions to develop a questionnaire, the statistical population for the survey is limited to 80 individuals (senior managers and technical experts) from 15 subsidiaries of Tadbir Bank Keshavarzi Holding headquartered in Tehran. This relatively small and geographically concentrated sample could affect the broader applicability of the results.

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