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Providing a Model of Factors Affecting the Internal Control Quality (ICQ) in Industrial Companies

Reza Sotudeh
Assistant Professor of Accounting, Faculty of Management and Accounting, Zahedan Branch, Islamic Azad University, Zahedan, Iran.

Narges Kalantari
PhD Student in Accounting, Faculty of Management and Accounting, Zahedan Branch, Islamic Azad University, Zahedan, Iran

Reza Mohammadi
PhD Student in Accounting, Faculty of Management and Accounting, Zahedan Branch, Islamic Azad University, Zahedan, Iran

Abstract

Since internal control plays a significant role in the success of organizations and companies and the advancement of organizational goals, this study is conducted to provide a model of factors affecting the internal control quality (ICQ) in industrial companies. This study has an exploratory mixed (qualitative-quantitative) design. The study population in the qualitative section includes experts in the field of internal control, risk management, management, etc., and saturation was obtained after interviewing 8 subjects using the criterion sampling method. In the quantitative section, the population includes all staff, experts, and related individuals, from which 385 people are selected by convenient sampling. The study tools are interviews in the qualitative section and questionnaires in the quantitative section. Findings from semi-structured interviews with experts indicate that 5 components of the management model (management style, expertise, understanding the condition, goal setting, system evaluation, finding gaps, and deployment), organizational culture (organizational beliefs and values, organizational rules, and system model), risk management (financial engineering, financial literacy, systematic risk, non-systematic risk, and strategic model), information technology (information transmission and processing, organizational flexibility, and innovation model), and organizational structure (human resources, infrastructure development, and communication resources) affect the internal control quality. Moreover, the structural equation modeling (SEM) confirms all study relationships and model paths, and the model has a high fit.

Keywords: internal control, risk management, organizational culture, organizational structure.

Introduction

International trade is an interconnected system in which success depends on having a competitive advantage and the ability to compete with other competitors and companies with the same policies (Distanont et al., 2018). Due to the existence of business organizations shared in the work structure, the new business structure has turned business competitiveness, risk-taking, and its management and success in business based on its principles into fundamental factors in this field (Tae, et al., 2020). Accordingly, the international trade system has established a systematic relationship between the different systems of countries. These systems need to interact with each other to succeed and achieve business goals and profitability (Belz, 2010). In this regard, recent business and structural conditions require a holistic approach that allows for the achievement of large-scale success in related sectors (Durmaz and Dusun, 2016). Roadmaps and planning paths are important topics in this area. Business performance and its model at different levels are associated with different risks in this sector (Fernandez, 2016). Success no longer requires constant external control. Today, a system needs internal control to succeed. Therefore, the concept of internal quality control (ICQ) in this field is very important and needs serious attention.

ICQ in companies can be affected by the characteristics of the company, the quality of auditing, and the quality of control of companies. Establishing an appropriate ICQ system in companies will lead to improved accountability and financial transparency (Ghaderi et al., 2019). A system with an effective internal control model creates a competitive advantage due to the multifaceted operational and counteracting power of this type of system (International Federation of Accountants (IFAC), 2012). According to Kozo, internal control is a process designed by the board of directors, managers, and other employees to gain acceptable assurance for achieving organizational goals concerning operations, reporting, and compliance (Maleki et al., 2020). Accordingly, access to this system is a vital issue that has always faced serious problems. This study tries to provide solutions to solve these problems with an operational and structural perspective.

Theoretical Foundations

The financial crisis of the last decade has had devastating effects on financial stability and profitability in various dimensions. Studies suggest that many companies and institutions are poorly managed in various areas such as risk, where risks are not properly identified, managed, and monitored. A company must be flexible, operate in a variety of economic conditions, and not rely on external resources to support its operations to be sustainable (Cristea, 2021; Fontnouvelle et al., 2020). One of the foundations of development in any organization is its management system. The management system is the pattern of affairs and the structure that determines the executive process in a multifaceted relationship between the dimensions of the organization and related indicators. The structure of a macro-and micro-management system is influenced by the structure of society, and change in any of its dimensions arises from changing conditions and corrective consideration around it (Ramos, 2020; Gaitan et al., 2019; Jain, 2016). Management is something that is associated with quality control in the organization, but studies show that it pays more attention to the external aspect to increase the quality of a structure. In this context, the improvement of this model based on an intra-organizational and systematic structure should be considered with the establishment of an internal quality control system. One of the most important factors in achieving operational efficiency, promoting financial accountability and transparency, complying with laws and regulations, and helping to prevent financial fraud and abuse is the proper deployment of internal control systems in economic units. Accordingly, professional and legislative institutions in different countries have developed frameworks, statements, and guidelines on how to establish, evaluate, and report on internal control by the management and audit of internal control (Ghanbarian, 2011). Internal control is an important part of an organization's management, which includes the programs, methods, and procedures used by the organization to achieve its existential mission and micro and macro goals (Standards for Internal Control in the Federal Government, 1999, quoted by Hajiha et al., 2015).

According to studies, organizational leaders, organizational culture, management, personnel, resources, information technology, and communications concern internal control and related dimensions (Kantamas et al., 2021). Organizational culture is one of the most important factors that lead to a pattern of success in a specific organizational structure (Simovic et al., 2020). This affects the quality of the organizational system such as internal control and quality enhancement. Another issue is paying attention to information technology and related structures. Changes in information technology in contemporary organizations require continuous changes in the relevant work processes. The integration of new technologies is strongly linked to the emerging principles of knowledge management and organizational learning culture. In successful organizational learning, individual learning is continuous, knowledge is shared, and organizational culture supports learning (Berce et al., 2008).

Technology reflects the culture of the country of origin. Understanding the modern technologies in developing countries is not as easy and fast as in developed countries (Shaukat and Zafar, 2010). Organizational culture can support the link between technology adoption and organizational growth and, consequently, can be a critical success factor (CSF) in the development and implementation of information systems. Understanding the meanings, norms, and power in organizations is very important when developing and implementing an information system (Indeje and Zheng, 2010). The model is one of the issues that indicate the importance of internal control concerning management issues and along with other identified structures in this field. This study tries to provide a model with an exploratory and analytical approach.

Literature Review

Table 1. Literature review

Row	Researcher (s)	Year	Findings
1	Kantams et al.	2021	organizational leaders, organizational culture, management, personnel, resources, information technology, and communications concern internal control and related dimensions.
2	Kafidipe et al	2021	Ignoring strategic risk management plans and structures leads to failure in the management structure.
3	Tran et al.	2021	Control environment and activities affect ICQ. In this regard, the management model and the use of a proper organizational and management structure play a role in ICQ.
4	Duffie	2019	Failure to properly apply risk system strategies and disregard for all levels of management and control increases the likelihood of failure in a particular structure.
5	Balsam, Jiang, and Liu	2012	Most internal control weaknesses at the company level are severely limited by the motivations of shareholders, but these weaknesses more concern the motivations of managers.
6	Yazawa	2010	Companies with internal control weaknesses are smaller, more complex, financially weaker, and less developed.
7	Amado and Inanga	2009	Factors affecting ICQ include regulatory activities, risk assessment, communications, control, and information technology.

Methodology

This study has an exploratory mixed design in which qualitative data are first collected. The exploration mixed design seeks to investigate the uncertain position. This study is performed by the exploratory mixed method. Thematic analysis is used to identify factors affecting ICQ in industrial companies. Relationships between factors are analyzed based on structural equation modeling (SEM).

Population and sample

The study population consists of two groups:

1. In the qualitative section, it includes experts in the fields of internal control, risk management, management model, etc., who are selected by the sampling method. Inclusion criteria are having experience, expertise, and research background. Saturation is obtained after interviewing 9 subjects.
2. In the quantitative section, it includes all staff, experts, and related individuals, including target personnel, from which 385 people are selected by convenient sampling.

The following equation is used to determine the sample size in the quantitative section:

$$n = \frac{(1/96)^2 (0/5)(1-0/5)}{(0/5)(1-0/5)} \approx 385$$

The sample size is determined using the Cochran formula. It is worth noting that if the p-value is not available, 0.5 can be considered for it. In this case, this formula will give the largest and most conservative value possible. By placing the data obtained from the sample members and other indicators examined, the sample size is determined as 385 subjects.

Findings

Qualitative section

The most important method used in this study to collect data is the interview. To this end, Robert Yen proposes the logic of repetition as the basis of this method.

Three strategies are used to validate the findings:

Peer review: Using this strategy, the researcher uses the views of other researchers who have information about this approach and the method and concept under study. Their comments on the coding, the form of the interviews, and other items, as well as a comparative study, make it possible to confirm the accuracy of the process. In this regard, the researcher studies the suggestions of others about how to conduct interviews or present the results and perceptions of researchers who have different views from others and decides which part of their views to include in the research. In this study, the opinions of two experts who have research and executive backgrounds in the field are used and the necessary changes are made based on their opinions following the above principle.

Note-taking: One way to help ensure the accuracy of the results is to take notes on the study steps. Notes in which the researcher records his or her thoughts while collecting and analyzing data allow the reader to see how the researcher has achieved the results. In this study, the researcher takes notes on the emphasis, type of speech, and prominence of the issues during the interviews and records other important points that can be explored and used in the analysis of the findings.

Focus group: In this study, a group consisting of samples participating in the study discusses to confirm the process of data analysis, and the researcher modifies and reviews the resulting process by summarizing their views on the process.

Analytical study shows that 102 open codes are obtained from factors affecting ICQ in industrial companies. By categorizing the most important categories, 72 indicators, 19 criteria, and 5 main factors are identified, which are discussed below. Important factors in this section include management model, organizational culture, risk management, information technology, and organizational structure.

In the following, each of the identified themes is discussed.

Table 2. Thematic analysis of interviews with subjects concerning factors affecting ICQ

	Row	The main themes	The main subthemes	Repeatability of all subthemes
Management	1	Management style	Organizational management model,	20

model			leadership style, and functional style	
	2	Expertise	Professional competence, professional model, experience, and executive expertise	17
	3	Understanding the condition	Needs assessment, instrumental needs, and executive needs	15
	4	Goal setting	Goal setting, goal tools, and goal achievement model	8
	5	System evaluation	Current position, desired position, and distance between existing position and desired position	11
	6	Finding gaps and deployment	Order management, weakness management, correction management, and system implementation	16
Organizational culture	7	Organizational beliefs and values	Organizational principles, organizational values, internal control, and citizenship and corrective behavior	21
	8	Organizational rules	Explained rules, general rules, executive rules, and flexible rules	17
	9	System model	Open or closed system structure, system flexibility, system objective (process or action-oriented) model, control model, and organizational identity model	
Risk management	10	Financial engineering and literacy	Perceptual structure, segregation structure, regulatory expertise, knowledge of financial issues, policy budgeting, economic consequences, financial implications, financial services, and internalization of the financial model in structuring and reforming	9
	11	Systematic risk	General condition model, internal structure and condition, and general market	13
	12	Non-systematic risk	Financial and structural conditions, instrumental and executive conditions, and supportive conditions	12
	13	Strategic model	Strategic understanding of the problem and business, adapting the situation, improving the functional structure, building support and team support, and applying the general principles of crisis management	10
Information technology	14	Information transmission and processing	Executive and information organization	11
	15	Organizational flexibility	Executive flexibility, internal agility, and organizational model	14
	16	Innovation model	Organizational change and methodological and executive innovation	11
Organizational	17	Human resources	Human performance, organizational	14

structure			commitment, organizational performance, efficiency, and resource allocation	
	18	Infrastructure building	Resource building, resource availability, and supportive resources	13
	19	Communication resources	Organizational communication, employee relations, and organizational atmosphere	12

* A code may be repeated several times in an interview.

According to semi-structured interviews, that 5 components of the management model (management style, expertise, understanding the condition, goal setting, system evaluation, finding gaps, and deployment), organizational culture (organizational beliefs and values, organizational rules, and system model), risk management (financial engineering, financial literacy, systematic risk, non-systematic risk, and strategic model), information technology (information transmission and processing, organizational flexibility, and innovation model), and organizational structure (human resources, infrastructure development, and communication resources) affect ICQ.

In the next step, a researcher-made questionnaire is designed based on the identified themes and subthemes. The content validity of the questionnaire is verified by experts, and the internal consistency of the test items is measured through Cronbach's alpha. The results of this tool are as follows:

Table 3. Evaluation of psychometric properties of the researcher-made questionnaire

Factor	Construct validity	Cronbach's alpha coefficient	Combined reliability
Management model	0.658	0.817	0.859
Organizational culture	0.594	0.809	0.841
Risk management	0.663	0.779	0.811
Information technology	0.701	0.732	0.778
Organizational structure	0.582	0.801	0.834

According to the table above, the value of the average variance extracted (AVE) index for all concepts and dimensions of the study is greater than 0.50. Since convergent validity is confirmed when the AVE value is greater than 0.50, it can be said that convergent validity is confirmed for all concepts and dimensions. Besides, the reliability of each component, which indicates the internal fit of the test items, is greater than 0.7 in all components, suggesting the adequacy of the researcher-made tool.

In the next step, the correlation between the variables is examined.

The results of the Pearson correlation test on variables show that there is a significant correlation (positive or negative) between all components in each group.

Since the correlation coefficients between the variables are significant, SEM can be used. In this method, a standard model is used to determine how and the level of effect of latent variables on each other, a significant model to show the significance of these effects, and fitness indicators to evaluate the fit of the model.

In the following, SEM is used to evaluate the effectiveness of the identified variables.

Table 4. The results of SEM

Row	The relationship origin: Independent latent variables (ζ)	The relationship destination: dependent latent variable (η)	The coefficient of determination	(t-value)	Result
1	Management model	ICQ	0.44	7.81	Confirmed
2	Organizational culture	ICQ	0.39	6.28	Confirmed
3	Risk management	ICQ	0.41	7.13	Confirmed
4	Information technology	ICQ	0.40	6.68	Confirmed
5	Organizational structure	ICQ	0.36	5.81	Confirmed

Considering that the significance coefficient is lower than 0.05 and the t-value is above 1.96, it can be concluded that the identified components have a significant effect on the dependent variable.

Examining the model fit

The results of the indices obtained from the implementation of the model can be seen in the table below.

Table 5. SEM fit indices

Indices	χ^2	AGFI	GFI	CFI	RMSEA
ICQ	589.11	0.95	0.94	0.92	0.008

According to the fit indices in the above table, the relative chi-square value on the degree of freedom is less than 3. In the other indices AGFI, GFI, and CFI, it is above 0.9, indicating appropriate adequacy. Also, RMSEA is less than 0.05. In other words, it can be argued that the model has a high fit and is efficient.

Ranking

Table 6. Ranking of the dimensions of ICQ

Component	Rank
Management model	1
Organizational culture	4
Risk management	3
Information technology	2
Organizational structure	5
Df=4 Sig=0.001	

Based on the findings, management model, information technology, risk management, organizational culture, and organizational structure have the greatest effect on ICQ in industrial companies, respectively. Moreover, according to the results of the Friedman test, which shows a significance level of less than 0.01, the ranking of factors in all groups is significant at the 99% confidence level.

Conclusion

Internal control is important for monitoring organizational operations in various departments. To achieve ICQ, organizations must identify different perspectives in which the components of internal control play a decisive role. Internal control is a process designed by management and applied within the organization to provide reasonable assurance of the reliability of financial information and other matters and to comply with policies, procedures, rules, regulations, and laws (Tran et al., 2021; Pham, 2020; Shaman et al., 2019).

In this regard, internal control is a process performed by managers and employees to ensure the achievement of organizational goals (Kozo, 2013), and its proper use has many positive consequences. Accordingly, this study seeks to provide a model of factors affecting ICQ in industrial companies. According to the findings of the qualitative section of the study, 5 components of the management model (management style, expertise, understanding the condition, goal setting, system evaluation, finding gaps, and deployment), organizational culture (organizational beliefs and values, organizational rules, and system model), risk management (financial engineering, financial literacy, systematic risk, non-systematic risk, and strategic model), information technology (information transmission and processing, organizational flexibility, and innovation model), and organizational structure (human resources, infrastructure development, and communication resources) affect the internal control quality. Moreover, the structural equation modeling (SEM) confirms all identified relationships. In the ranking section, the findings also indicate that management model, information technology, risk management, organizational culture, and organizational structure have the greatest effect on ICQ in industrial companies, respectively. These results, which are consistent with other studies in this field, indicate that to establish and implement an effective internal control system in industrial companies, organizations must have an efficient macro-and micro-management model to achieve effective internal control by creating an optimal organizational culture in the organizational departments along with the quality management model, relying on the correct structuring of the organizational resources and atmosphere, and applying a comprehensive organizational model.

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