



## Introducing an ERM-Based Optimal Banking Performance Development Model

Ali Afruzianazar

*Department of accounting, Islamic Azad University, Bonab, Iran*

Nader Rezaei\*

*Department of Accounting, Bonab Branch, Islamic Azad University, Bonab, Iran*

Zohreh Hajia

*Department of Accounting, Tehran East Branch, Islamic Azad University, Tehran, Iran*

Asgar Pakmaram

*Department of accounting, Islamic Azad University, Bonab, Iran*

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### Abstract

Services are an essential central element of the economy in today's societies, and banks, as one of the essential service organizations, direct and support many of the community's economic activities. This study aimed to develop an optimal model for East Azarbaijan banks' performance based on organization risk management using the standardized questionnaire of Kosovo 2017. To achieve this purpose, the director or assistant director, head or deputy head, bank managers, and experts of banks were selected for statistical sampling. The structural equation modeling approach was used to estimate the model and tests. Organizational risk management factors, including "written job descriptions and resources to describe personnel duties, fraud risk assessment concerning how management and other employees participate," was assessed as factors affecting bank performance. Therefore, the banking system's structural problems should be resolved to function and develop in the future. Consequently, to resolve the banking system crisis, it is necessary to reform the banking system.

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**Keyword:** Banking Performance, Enterprise Risk Management (ERM)

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*Corresponding Author:* Assistant Professor of Accounting, Email: [naderrezaeimiyandoab@gmail.com](mailto:naderrezaeimiyandoab@gmail.com)



## **1. Introduction**

Nowadays, the Iranian banking system faces many challenges and problems as though it is in a critical state while the global and even regional banking industry is growing increasingly. Therefore, the Iranian banking system's actions concerning the challenges are of great importance (Mousavi et al., 2020). The recent international banking crises showed that even banks classified as efficient banks, including Citigroup and Merrill Lynch, faced severe problems. It means that the concept of bank performance evaluation should be reconsidered. One common feature of performance appraisal approaches in the past was that these approaches were all limited to one perspective, examining performance from only one stakeholder perspective and ignoring other stakeholders' understandings or views in the financial institutions. All bank stakeholders should be involved in the evaluation process of the bank's performance; in other words, an efficient bank should meet all stakeholder groups' expectations. To put it plainly, it is necessary to assess all its stakeholders' satisfaction to measure a bank's performance. An efficient bank is a bank that achieves a certain level of overall satisfaction for all its individuals and stakeholders (Najaj et al., 2019).

The emergence of future society changes indicates that organizations will be significantly different from today (Chumpy & Venitin, 2009). Investigating and analyzing the banking system's near and far environment indicates that the environment is full of chaos and ambiguities, and complexities. It will face a series of challenges and concerns shortly. Since future development paths are highly uncertain, they cannot be predicted sufficiently by purely quantitative trend analysis methods. For example, considering recent years' analysis, it is evident that the use of e-banking is steadily increasing. If the trend is assumed to continue, it is expected that its use will be doubled in a decade (Aborden, 2007). Considering the problems of the country's banking system's performance, this study investigates how to understand banking performance concerning organizational risk management. Furthermore, according to the studies conducted in Iran on developing the organizational risk management performance model, this study has examined components that have not been considered in the previous research. Therefore, this study tries to answer the question of what kind of model is appropriate for the optimal development of bank performance in East Azerbaijan based on organizational risk management. To answer this question, predicting causal relationships of performance based on organizational risk management factors were studied. This study introduces a new concept of banking performance. Consequently, this study's results are expected to help managers, financial analysts, investors, and other stakeholders understand banks' performance in terms of organizational risk management factors and help them make sound financial and investment decisions. This study proceeds by outlining the theoretical foundations and backgrounds of related research as well as explaining the research method and hypotheses derived from the problem and theoretical foundations of the research and then explaining the hypotheses test results; finally, conclusions and suggestions will be mentioned.

## **2. Literature and Theoretical Foundations of the Study:**

### **2.1. Performance of Banks**

Performance appraisal is one of the essential tasks for managers in planning and goal setting. Appraisal not only helps managers choose a strategy and financial structure, but it also shows how financial strategies and structures affect banks' performance. Hence, measuring banks' performance and evaluating the overall financial position and operations results is necessary to make rational decisions; therefore, customers, investors, and shareholders need criteria to properly manage bank performance. (Abolfatti, 2018). Objective performance indicators are indices that are measured in real terms based on

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objective data. They include profitability indices such as return on equity, return on investment, and earnings per share. Subjective indicators include most of the indices formed based on the organization's stakeholders' judgment. These indicators include customer satisfaction, employee satisfaction, and success in delivering new products (Doaei, 2011). The scale used in this study is of the second type and subjective because subjective criteria were used to prevent disclosure problems of respondents' information. This study used comprehensive quality management and organizational risk management factors to evaluate banks' performance.

## 2.2. Enterprise Risk Management (ERM)

In what ways can an enterprise risk management framework be a useful tool for risk management and professionals? And who wants to build or enhance risk management processes and capabilities? The framework's risk management framework provides structure, modes of operation, and a conceptual picture of what risk management can entail. For an organization risk management startup, a framework can provide a useful pathway to help guide them in formulating their plans and related processes (Ghanbarian, 2014). In general, ERM is an integrated and continuous process for managing risks across all organization dimensions - including strategic, financial, operational, adaptive, and credit risks, to minimize unexpected performance changes and maximize its intrinsic value. This process enables the board and management to make their own risk-return decisions by laying out the basic needs associated with the organization's governance and policies (including risk appetite), risk data and analysis, risk management, and performance monitoring and reporting with more awareness and information (Lam, 2017).

### 2.2.1. The Coso Framework (COSO)

In 1992, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) introduced and implemented internal control in the framework of an integrated framework.

This committee which is a privately owned entity run by five professional bodies including the American Accounting Association (AAA), American Society of Chartered Accountants (AICPA), International Finance Managers Association (FEI), Management Accountants Association (MAA), Internal Auditors Association (IIA) has been established to develop comprehensive frameworks and guidelines for internal control, commercial risk management, and fraud prevention to improve monitoring and reducing fraud in organizations (Kasiri, 2014). The internal control framework has led to the development of financial and non-financial reporting processes and internal reporting. This framework's results have included changes in operating and business units and losses to them over the past decades. These goals include:

- Strategic goals: High-level, supportive, and mission-oriented goals
- Operation goals: Efficient and effective use of its resources
- Reporting goals: Reliability of reporting
- Compliance goals: Compliance with relevant laws and regulations

#### Comprehensive Risk Management Components

Comprehensive risk management consists of eight interrelated areas from the organization's management style and is integrated with the management process. These components include:

**Internal environment:** the internal environment encompasses the organization's environment and provides a basis for how business unit employees are exposed to risk. These bases include the philosophy of risk management, risk appetite, honesty, ethical

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values, and their operating environment (Morshedzadeh, 2016).

### **Targeting**

Goals must be set before management can identify potential events that affect them. Comprehensive risk management ensures that management has established the process needed to formulate goals. The selected goals are consistent with the business unit's mission and its risk appetite. (Kasiri, 2013).

### **Event Identification**

In-company and out-of-company events affecting the business unit's objectives should be identified by separating opportunities and risks. Opportunities are redirected to processes of strategy formulation or management goals (Morshedzadeh, 2016).

### **Risk Assessment**

To determine how risks are managed, their occurrence likelihood and degree of impact are analyzed as a basis. Risks are evaluated based on inherent and residual bases (Morshedzadeh, 2016)

### **Risk Responses**

Management chooses the type of risk response (including avoidance, acceptance, mitigation by risk-sharing). It executes a series of measures to align the risk with the organization's degree of resilience and risk appetite (Morshadzadeh, 2016).

### **Control activities**

The policies and procedures necessary to ensure an effective response to risk are formulated and implemented (Morshadzadeh, 2016).

### **Information and communication**

Relevant information is identified, collected, and reported within a specific time frame so staff can perform their duties. Besides, an effective relationship is formed in a comprehensive shape with upstream, thorough, and downstream flows in the business unit (Morshedzadeh, 2016).

### **Supervision**

The comprehensive risk management process is fully monitored, and adjustments are made as necessary. Supervision is performed by continuous management activities, separate evaluations, or both (Kasiri, 2013).

## **2.3. Organization Risk Management and Banking Performance**

Risk management is one of the management policy tools in any organization developed and used by reviewing and evaluating the risks in the system to prevent adverse conditions or mitigate the effects of risk factors, in other words, to reduce risks. Strategic risk management can be useful and a powerful tool for identifying early performance weaknesses if it started early so that management can organize operational plans to manage risks (Curtis et al., 2004).

In today's vibrant global environment, risk management is an urgent concern for business (Gordon et al., 2009). Researchers have estimated that enterprise risk management (ERM) is one of the effective tools used by companies to reduce potential risks (Kioulep, 2002). Generally, risk management's primary purpose is to monitor the day-to-day operations, build recovery plans, and recognize the risky activities that sometimes provide indirect income to the organization. (Anderson, 2008; Gordon et al., 2009; Meshan et al., 2011). Risk management practice has made significant progress in three important dimensions: integration, technology, and people. The future of "success" of risk performance depends on balanced investment in all three areas to generally do its job.

Over the past decades, risk management has taken on a wide range of risk measures as well as multiple risks (Noko & Stoles, 2006). Nowadays, companies' top priority and

major concern are understanding the different types of risks (Liu, 2012). If faced with a dilemma, risks may arise (Abou et al., 2005). Today, businesses are less concerned about dealing with different risks individually. As a result, conditions such as integrated risk management, organization risk management, and risk management have emerged across a wide range of banks (Kalita, 2004). ERM is capable of maintaining some risks against others and enhances the share prices through complex risk management. In most companies, the only major risk is to handle all kinds of risks, but in fact, risk communication and structure must be developed at all levels of the bank (Muller, 2007). Although developed countries have already adopted ERM measures, developing economies are still struggling to implement the ERM framework in their capital markets. For example, Soltanizadeh et al. (2014) have found that ERM implementation differs across Malaysian industries. Hotels and infrastructure are more likely to implement an ERM plan. Bertin T et al. (2013) have used dummy variables to measure ERM in European banks.

### **3. Research Background**

Fluoro (2017), in a study "Enterprise Risk Management and Performance of Italian companies," concluded that implementing an advanced level ERM leads to improvement and promotion of quality performance as well as a better market evaluation. Lundquwit (2018) stated that ERM is a framework for the emergence of advanced and coherent governance in the banking performance management system due to the prevention and identification of internal control system risks, information risk, agency risk, and liquidity, finally, default risk reduction based on ratings. Dioy Han et al. (2019) in a study showed that firms' performance in risk identification and management plays a significant role in the business's operational performance. Mousavi et al. (2020) concluded that evaluating internal controls, planning, and testing risks had a significant impact on banks' performance and efficiency.

Tari Verdi (2012), regarding the relationship between risk management and corporate performance, shows that two variables of risk management factors, namely, industry competitiveness and firm size, positively correlate with firm financial and non-financial performance. In contrast, the other two variables of risk management factors, namely environmental uncertainty and board supervision, are not related to corporate performance.

Bataglia (2017) showed that financial institutions using top risk management in ERM implementation perform ERM implementation with greater effectiveness, leading to mitigation and reduction of financial and non-financial performance risk and overall risk reduction in the organization. Ahmadi's study (2019) findings indicate that developed countries have adopted ERM strategies in their capital markets, but under developing countries such as Nepal, India, Bangladesh, and Pakistan still follow the developed countries in adopting ERM practices.

### **4. Research Question and Conceptual Model**

Research Question: What is the priority of factors related to performance-based organizational risk management of state banks of East Azerbaijan province?

Concerning the formulated question and the theoretical foundations in ERM-based performance modeling, the conceptual model of the study is formulated as follows:

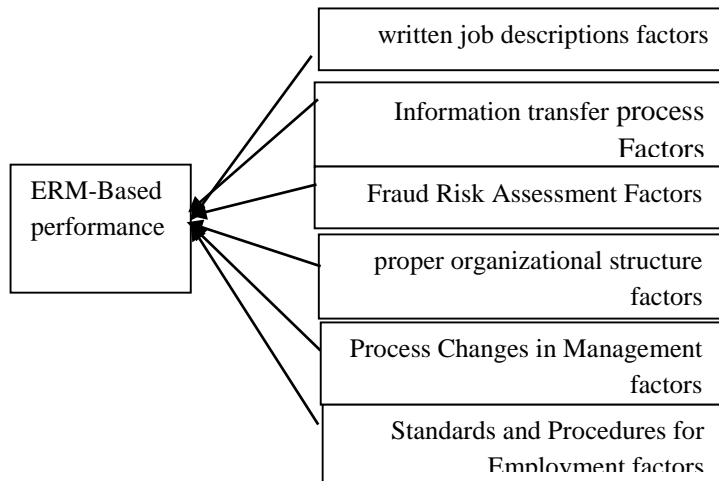


Figure 1: Theoretical Research Framework

## 5. Research methodology

This study is an applied one in terms of purposes, and it is a descriptive-analytic survey in terms of data collection methods based on a structural modeling approach. An online questionnaire (Porsline.com) was employed, and partial least squares in the data collection stage and the structural equation modeling approach were used in the inference stage. The questionnaires were distributed among the director or assistant director, head or deputy head, and experts of state banks of East Azarbaijan province, which included 223 persons. The Cochran formula was used to calculate the sample size. Accordingly, the statistical sample size was 152 persons.

According to Chen et al. (2003), the sample size should be estimated at 10 cases per parameter to have valid and generalizable results concerning the adequacy of the sample size in the structural equation modeling method. Awad (2017) has also suggested 5 items per parameter.

In this study, the data collection instrument for organizational risk management was a questionnaire based on the COSO 2017 questionnaire consisting of 50 questions on a five-choice scale. In addition, to develop and localize the research instrument and confirm its validity, university professors' and capital market experts' views were exploited.

## 6. Research Findings

Table 1. Respondents' Demographic Information

Variable	Group	Frequency	Percent
Gender	Male	147	96.7
	Female	5	3.3
Age (year)	Younger than 30	22	14.45
	31 to 40	71	46.74
	41 to 50	34	22.39
	51 to 60	25	16.42
Educational Level	Undergraduate and lower	88	57.81
	Graduate and higher	64	42.19

### Model analysis and hypothesis testing

Structural Equation Modeling using LISREL was employed to test the hypotheses. In the research model, the variables were modeled as higher-level reflective structures. The steps and methods are as shown in Table 2.

**Table 2.** Initial reliability of the questionnaire

Number of questions	alpha
50	0.934

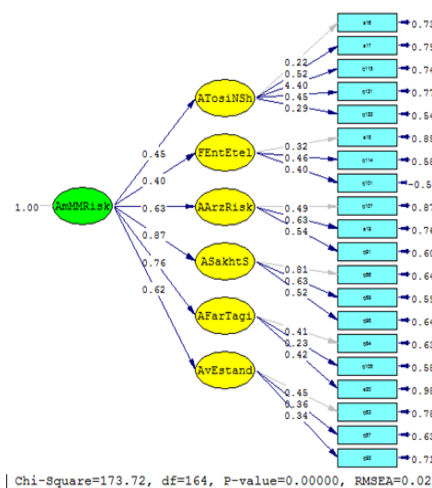
**Table 3.** Sampling adequacy

KMO Indices	0.860
Bartlett test	1494.209
Degree of freedom	1225
Significance level	0.000

Since the value of the KMO index is 0.860 (appropriate index is greater than 0.6), the statistical sample size is sufficient for factor analysis. Furthermore, Bartlett's test's significance level is less than 0.05%, which indicates that factor analysis is appropriate for model identification. Pebble test was used to select the number of factors for rotation, so 6 factors were selected for rotation.

As shown in the table, items 1 are based on theoretical basics of research, job descriptions, and resources to describe personnel tasks; items 2 are named after the theoretical foundations of the study ,factors associated with timely information transfer processes with external entities, items 3 are named according to the theoretical foundations of the study, fraud risk assessment factors according to how management and other employees participate in inappropriate practices items 4 are based on theoretical foundations of the study, organizational structure factors relevant to appropriate size, operational activities, and the location of the company, items 5 are based on theoretical foundations of the study, changes process in management and other related views and the philosophy of internal control and other relevant internal controls and items 6 are based on the theoretical foundations of the study ,available standards and procedures for recruitment, training, assessment and promotion, transfer and termination of service of staff.

**Research Question:** What is the optimal performance model based on state-owned banks' organizational risk management in East Azarbaijan province?



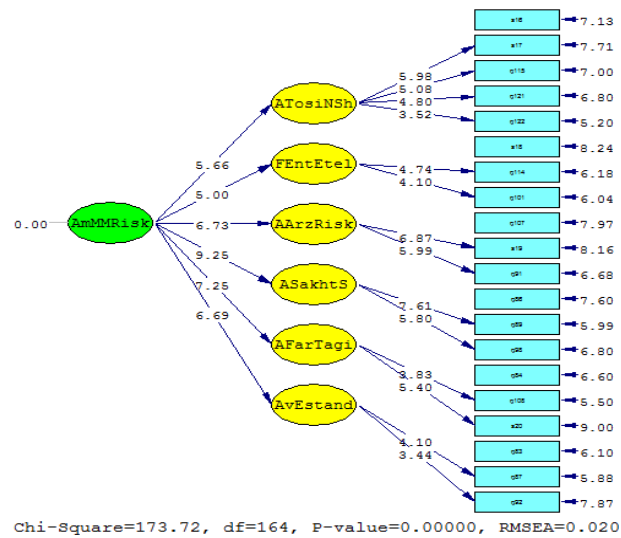
Chi-Square=173.72, df=164, P-value=0.00000, RMSEA=0.020

**Figure 2:** Confirmatory factor analysis of the second-order performance variable based on organizational risk management in terms of factor load

**Table 4.** Rotated matrix of operating loads of scale questions related to performance-based on organizational risk management

Items	1	2	3	4	5	6
The written description of jobs and resources for describing staff duties	0.619					
Organization Information System	0.608					
Training employees to understand the nature and scope of their work, their duties, and responsibilities	0.563					
(Informing failures to qualified persons responsible for corrections, senior management, and board of directors)	0.502					
Controlling access to information systems	0.470					
Timely and relevant information transfer processes to external parties		0.539				
Following the financial reporting duties and responsibilities		0.415				
Following up on existing policies and procedures		0.326				
Fraud risk assessment according to how management and other employees are involved in inappropriate practices			0.478			
Evaluation of the results of continuous and separate evaluations			0.464			
Coordinating the goals of the organization with the standards and regulations of the organization			0.358			
Suitable organizational structure with size, operational activities, and company location				0.503		
Examining the independence of the board of directors				0.415		
Compliance with the objectives of the external reporting with the financial reporting framework				0.392		
changes process in management and other related views and the philosophy of internal control					0.548	
Senior Management's Commitment to Ethical Values and Financial Reporting					0.373	
Periodic separate evaluations to provide impartial feedback					0.330	
Availability of standards and procedures for recruitment, training, and evaluation, promotion, transfer, and termination of employees' service						0.591
Examining the expertise of the Board of Directors regularly						0.439
Creating a statement of ethical concept evaluation						0.351





**Figure 3:** Confirmatory factor analysis of second-order performance variable based on organizational risk management in terms of coefficient of significance

**Table 5.** The effect of endogenous latent variables on the observed variables Y ( $y\lambda$ , LAMBDA-Y)

Item Parameters and Factors	Parameter b Estimation	Criterion error	Standardized Parameter	t
Written job description factors and resources to describe staff duties				
Priority for staff to access job skills in formulating training programs	0.21	0.73	0.22	-
Using an effective organizational structure and management system	0.51	0.79	0.52	5.98
Controlling Access to Information Systems	0.39	0.74	0.4	5.08
Organization Information System	0.44	0.77	0.45	4.8
Training employees to understand the nature and scope of their work, their duties, and responsibilities	0.28	0.54	0.29	3.52
Factors associated with timely information transfer processes with external parties				
High-level staff empowerment in decision making compared to other organizations	0.31	0.85	0.32	-
Following up on existing policies and procedures	0.45	0.58	0.46	4.74
Coordinating the goals of the organization with the external standards and regulations	0.39	0.54	0.40	4.10
Fraud Risk Assessment Factors Considering how management and other staff are involved in inappropriate practices				
Identifying risks related to financial reporting objectives	0.48	0.87	0.49	-
Staff training in their work	0.62	0.76	0.63	6.87

Description of financial reporting duties and responsibilities	0.53	0.60	0.54	5.59
Factors of organizational structure appropriate to size, operational activities, and corporate location				
Staffs' sufficient knowledge of professional development programs	0.80	0.64	0.81	-
Encouraging the organization to provide staff experiences and ideas	0.62	0.59	0.63	7.61
Receiving customer feedback and using them	0.51	0.64	0.52	5.80
Process changes factors in management and other related views and philosophy of internal controls				
Examining and controlling staff activities before providing services	0.40	0.63	0.41	-
Fraud Risk Assessment	0.22	0.58	0.23	3.83
Developing competitive strategies for the organization in the valuation of customers	0.41	0.98	0.42	5.4
Factors in the availability of standards and procedures for recruitment, training, and evaluation, and promotion, transfer, and termination of staff services				
Considering customer goals in formulating the organization's goals	0.44	0.78	0.45	-
Behavior support and appreciation (thinking out of the box)	0.35	0.63	0.36	4.1
Staff and client complaints as a threat	0.33	0.71	0.34	3.44

The above factor analysis shows that all paths are 95% significant.

Items 16, 18, 102, 58, 54, 52 are considered as fixed scale variables in this evaluation, and their t-values have not been reported. According to the information in Table 5, the estimated coefficients of all paths are significant. The standardized parameter values for each of the observed variables (markers) represent the factor loadings on the factor (latent variable), and t values greater than 1.96 represent the significance of this contribution.

Table 5 shows the effects of exogenous latent variables (organizational risk management-based performance), endogenous variables (written job description and resources to describe personnel tasks, factors related to timely information transfer processes to external parties. Evaluation factors of fraud risk according to how management and other employees are involved in inappropriate practices, factors of organizational structure appropriate to size, operational activities and location of the company, process changes factors in management and other related views and philosophy of internal controls and philosophy of internal controls, factors of standards and procedures for recruitment, training and evaluation and promotion, transfer and termination of service of employees).

The t value indicates organizational risk management performance, written job description factors and resources to describe staff duties, factors associated with timely information transfer processes with external parties, fraud risk assessment factors considering how management and other staff are involved in inappropriate practices, factors of organizational structure appropriate to size, operational activities and corporate

location, process changes factors. In management and other related views and philosophy of internal controls, process factors of change in management and other relevant views and philosophy of internal controls, and factors in the availability of standards and procedures for recruitment, training, and evaluation, and promotion, transfer, and termination of staff services are significant at a 95% probability.

**Table 6.** Total exogenous latent variables ( $\xi$ , KSI) on endogenous latent variables ( $\eta$ , ETA).

Route direction	Parameter estimation	Standardized B parameter	t
performance structures based on Organizational risk management			
Written job description factors and resources to describe staff duties	0.44	0.45	5.66
Factors associated with timely information transfer processes with external parties	0.39	0.40	5
Fraud Risk Assessment Factors Considering how management and other staff are involved in inappropriate practices	0.62	6.63	6.73
Factors of organizational structure appropriate to size, operational activities, and corporate location	0.86	0.87	9.25
Process changes factors in management and other related views and philosophy of internal controls	0.75	0.76	7.25
Factors in the availability of standards and procedures for recruitment, training, and evaluation, and promotion, transfer, and termination of staff services	0.61	3.62	6.69

Table 7 shows the model's goodness of fit index obtained from the confirmatory factor analysis, which indicates that the model fits well with the observed data. In other words, the definition of performance-based on organizational risk management corresponds to the six components in this study.

**Table 7.** Goodness-of-fit indices of the model of organizational risk management performance

Chi-square	Degree of freedom	Significance level	The root mean square error of approximation	The goodness of fit index	Adjusted goodness of fit index
173.72	164	0.000	0.020	0.92	0.93

The most crucial fitting statistic is chi-square. This statistic measures the amount of observed and estimated matrix difference. The non-significance of this statistic shows the model's fitness with the data. Still, the disadvantage of this statistic is its sensitivity to sample size. That is, in large samples, the probability of its non-significance is reduced. Values less than 0.05 for the root mean square error of approximation and values greater than 0.9 for goodness-of-fit index and adjusted goodness-of-fit index are considered as criteria for model fitness with observed data. Consequently, this model of performance-based on organizational risk management with six categories of factors is confirmed.

## 7. Discussion and Conclusion

Optimizing state-owned banks' performance in East Azerbaijan province is one of the topics concerned with bank clients. ERM factors in this research include written job descriptions and resources to describe personnel tasks, timely information transfer processes to external parties, fraud risk assessment of how management and other

employees are involved in inappropriate practices, organizational structure appropriate with size, operational activities, the process of changes in management and other related views and philosophy of internal control, standards and procedures for recruitment, training, evaluation, and promotion, transfer and termination of staff services. After collecting information and using a hierarchical analysis approach, we found out the above factors had the heaviest weight in influencing banks' performance in East Azarbaijan, Iran. The effect of each of these six factors influencing organizational risk management performance was significantly different. In other words, fraud risk assessment factors considering how management and other employees are involved in inappropriate practices, and written job descriptions and resources to describe personnel tasks have the least relationship with organizational risk management performance in state-owned banks in East Azerbaijan. The results of the studies by Remdios et al. (2018), Lundcuit (2018), and Dioy Han Gran et al. (2019), Tarry Verdi Yadollah (2012) are also in line with the results of this study. Thus, in general, by extracting this model, one can firstly formulate a specific mechanism for evaluating, formulating, and enhancing the credit quality of the banking system, and secondly by measuring the extracted model, monitoring comparisons as well as monitoring and evaluating the performance of each bank will be available.

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