



Applied-Research Paper

Optimal Banking Performance Model based on ERM

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ARTICLE INFO

Article history:

Received 2020-05-23

Accepted 2020-08-18

Keywords:

Banking Performance

Enterprise Risk Management (ERM)

Banking Performance

ABSTRACT

Services are an important major element of the economy in today's societies, and banks as one of the most important service organizations direct and support many of the community's economic activities. The purpose of this study was 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's head, bank managers, and experts of banks were selected for statistical sampling, and a structural equation modeling approach was used for estimating 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 structural problems of the banking system should be resolved so that this system can function and develop in the future, and consequently, to resolve the crisis of the banking system, it is necessary to reform the banking system.

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 [15]. The recent international banking crises showed that even banks which were classified as efficient banks, including Citigroup and Merrill Lynch, faced serious 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 the understandings or views of other stakeholders 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 the expectations of all stakeholder groups. To put it plainly, it is necessary to assess the satisfaction of all its stakeholders to measure the performance of a bank. An efficient bank is a bank that achieves a certain level of overall satisfaction for all its individuals and stakeholders [28]. The emergence of changes in the future society indicates that organizations will be significantly different from those of today [8]. Investigating and analyzing the near and far environment of the banking system indicate that the environment is full of chaos and am-

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biguities and complexities, and it will face a series of challenges and concerns in near future. Since future development paths are highly uncertain, they cannot be predicted sufficiently by purely quantitative methods of trend analysis. 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 [4]. Considering the problems of the performance of the country's banking system, this study investigates how to understand the banking performance concerning organizational risk management. Furthermore, according to the studies conducted in Iran on the development of 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, the results of this study are expected to help managers, financial analysts, investors, and other stakeholders to better 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. Not only does appraisal not only help managers to choose a strategy and financial structure, but also it shows how financial strategies and structures affect banks' performance. Hence, measuring banks' performance, and evaluating the overall financial position and results of operations is necessary to make rational decisions; therefore, customers, investors, and shareholders need criteria to properly manage bank performance. [1]. Objective performance indicators are indices that are measured in real terms based on 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 which are formed based on the judgment of the organization's stakeholders. These indicators include customer satisfaction, employee satisfaction, and success in delivering new products [10]. 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. In this study, we 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 [22]. In general, ERM is an integrated and continuous process for managing risks across all dimen-

sions of the organization - including strategic, financial, operational, adaptive, and credit risks, to minimize unexpected performance changes and maximize the intrinsic value of the organization. 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 [23].

2.2.1 The Coso Framework (COSO)

In 1992, the Committee of Sponsoring Organizations of the Tread Way Commission (COSO) introduced and implemented internal control in the framework of an integrated framework. This committee 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 [19]. Internal control framework has led to the development of financial and non-financial reporting processes and internal reporting, and the results of this framework have included changes in operating and business units as well as 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 that originate from the organization's management style and are 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 values, and their operating environment [28].

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 and that the selected goals are consistent with the mission of the business unit and with its risk appetite [15].

Event Identification: In-company and out-of-company events affecting the achievement of the business unit's objectives should be identified by separating opportunities and risks. Opportunities are redirected to processes of strategy formulation or management goals [19].

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 [16].

Risk Responses: Management chooses the type of risk response (including avoidance, acceptance, and mitigation by risk sharing) and executes a series of measures to align the risk with the degree of resilience and risk appetite of the organization [16].

Control activities: The policies and procedures necessary to ensure an effective response to risk are formulated and implemented [16].

Information and communication: Relevant information is identified, collected, and reported within a specific time frame so staff can perform their duties. In addition, an effective relationship is formed in a comprehensive shape with upstream, thorough, and downstream flows in the business unit [16].

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 [16].

2.3 Organization Risk Management and Banking Performance

Risk management is one of the management policy tools in any organization that is developed and used by reviewing and evaluating the risks in the system to prevent adverse conditions or to 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 started early so that management can organize operational plans to manage risks [10]. In today's vibrant global environment, risk management is an urgent concern for businesses [21]. Researchers have estimated that enterprise risk management (ERM) is one of the effective tools used by companies to reduce potential risks [9]. Generally, the main purpose of risk management is to monitor the day-to-day operations, build recovery plans, and recognize the risky activities that sometimes provide indirect income to the organization. [23]. 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 be able 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 [18]. Nowadays, the top priority and major concern of companies are to understand the different types of risks [24]. If faced with a dilemma, risks may arise [5]. Today, businesses are less concerned about dealing with different risks individually, and as a result, conditions such as integrated risk management, organization risk management, and risk management have emerged across a wide range of banks [20]. 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 handling all kinds of risks, but in fact, risk communication and structure must be developed at all levels of the bank [17]. Although developed countries have already adopted ERM measures, under-developing economies are still struggling to implement the ERM framework in their capital markets. For example, Soltanizadeh et al. [27] have found that ERM implementation differs across Malaysian industries. Hotels and infrastructure are more likely to implement an ERM plan. [11] have used dummy variables to measure ERM in European banks.

3 Research Background

[12] 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. [7] They believe Financial structure and capital intensity and size significantly moderate the relationship between a financial structure with ROA and ROE. This will improve the performance of banks. [14]. A study entitled Evaluating the Performance of an Ambidex-

trous Bank Using an Agent-based Modelling Approach: A Case Study of Sepah Bank showed that there is a positive and significant relationship between bank performance and increasing customer satisfaction and attraction in the market and increasing its market share.[22] a study titled *Corporate Risk Management and Risk Representation on Banking Performance* 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 risks, agency risk and liquidity, and finally, default risk reduction based on ratings. [26] In a study entitled The analysis of the existence of the hypothesis of adverse selection on the relationship between off-balance sheet items and the bank's risk Balance sheet itself does not specify and show all the Performance that a bank pays rather, off-balance sheet activities, including off-balance sheet risk and judgments, affect banks' performance. [10] a study showed that firms' performance in risk identification and management plays a significant role in the operational performance of the business. [15]their study concluded that the evaluation of internal controls, planning, and testing of risks had a significant impact on banks' performance and efficiency.

[28] regarding the relationship between risk management and corporate performance shows that two variables of risk management factors namely, industry competitiveness and firm size have a positive relationship 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. [6] research with the appointment of a CFO Chief Risk Officer showed that financial institutions using top risk management in ERM implementation perform ERM implementation with greater effectiveness which generally leads to mitigation and reduction of financial and non-financial performance risk and overall risk reduction in the organization. The findings of [2] indicate that developed countries have adopted ERM strategies in their capital markets, but developing countries such as Nepal, India, Bangladesh, and Pakistan still follow the developed countries in adopting ERM practices.

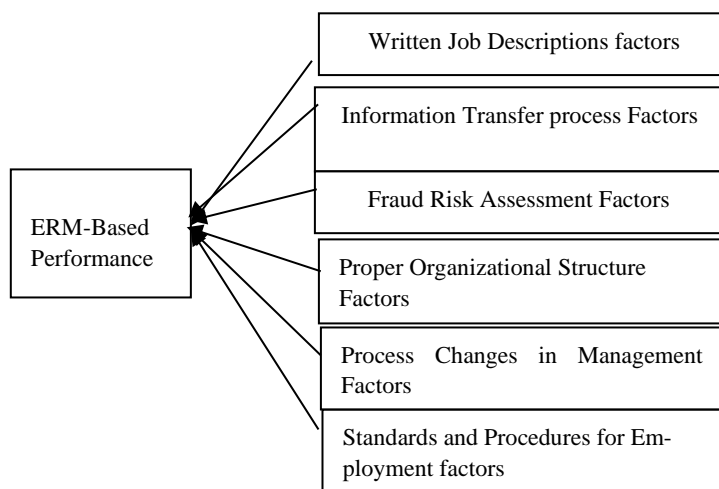


Fig 1: Theoretical Research Framework

3.1 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? Regarding the formulated question and the theoretical foundations in ERM-based performance modeling, the conceptual model of the study is formulated in Fig. 1.

3.2 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 were in the data collection stage and the structural equation modeling approach was 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. Concerning the adequacy of the sample size in the structural equation modeling method, according to [4], the sample size should be estimated at 10 cases per parameter to have valid and generalizable results. [3] 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 in the form of 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.

4 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 |

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

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 |
|--|-------|-------|-------|-------|-------|-------|
| 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 on a regular basis | | | | | | 0.439 |
| Creating a statement of ethical concept evaluation | | | | | | 0.351 |

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 organizational risk management of state-owned banks in East Azarbaijan province?

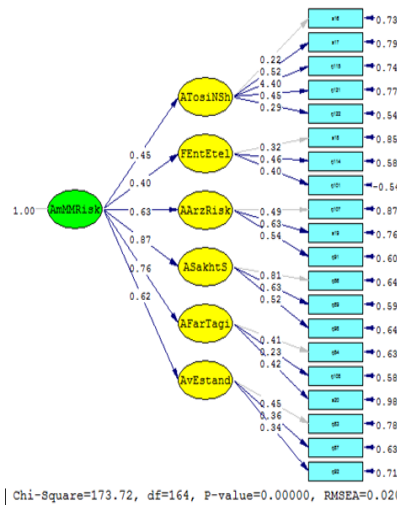


Fig. 2: Confirmatory Factor Analysis of Second-order Performance Variable Based on Organizational Risk

Management in Terms of Factor Load

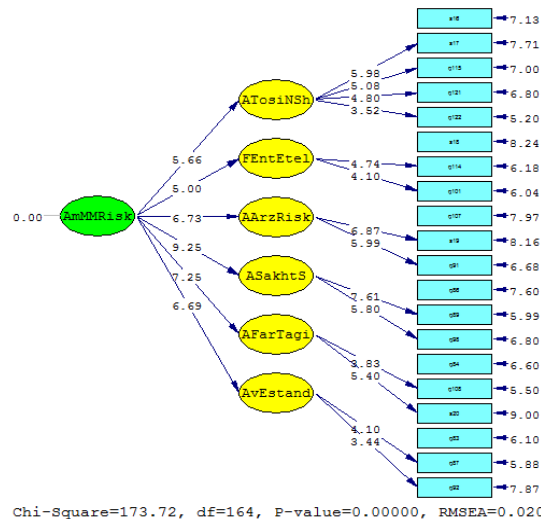


Fig. 3: Confirmatory Factor Analysis of Second-order Performance Variable Based on Organizational Risk Management in Terms of Coefficient of Significance

Table 5. The Effect of Endogenous Latent Variables on the Observed Variables Y ($\gamma\lambda$, LAMBDA-Y)

| Item Parameters and Factors | Parameter b Estima- tion | 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 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 | 0.4 | 4.1 |
| 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 | 0.6 | 0.54 | 5.59 |
| Factors of organizational structure appropriate to size, operational activities and corporate location | | | | |
| Staffs' sufficient knowledge of professional development programs | 0.8 | 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 | 5.8 |
| Process changes factors in management and other related views and philosophy of internal controls | | | | |
| Examining and controlling staff activities before providing services | 0.4 | 0.63 | 0.41 | - |
| Fraud Risk Assessment | 0.22 | 0.58 | 0.23 | 3.83 |
| Developing competitive strategies for the organization in valuation of customers | 0.41 | 0.98 | 0.42 | 5.4 |
| Factors in 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, and 52 are considered 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).

Table 6. The Effect of Total Exogenous Latent Variables (ξ , KSI) on Endogenous Latent Variables (η , 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 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. 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 | Goodness of Fit index | Adjusted Goodness of Fit Index |
|------------|-------------------|--------------------|---|-----------------------|--------------------------------|
| 173.72 | 164 | 0 | 0.02 | 0.92 | 0.93 |

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 signed with a 95% probability. Table 7 shows the model's goodness of fit index obtained from 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.

The most important fitting statistic is chi-square. This statistic measures the amount of observed and estimated matrix difference. The non-significance of this statistic shows the fitness of the model with the data, but 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 the 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.

5 Discussion and Conclusion

The issue of optimizing the performance of state-owned banks in East Azerbaijan province is one of the topics that has been a concern of 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 the performance of banks in East Azerbaijan, 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 [29], [22], [10], [28] 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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