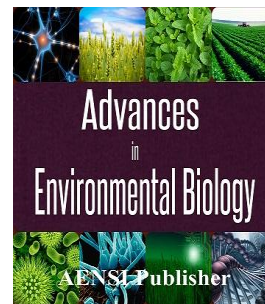




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“Interpretive structural modeling for effective enablers in evaluating the performance of the bank (case study: Bank of Bushehr)”

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ABSTRACT

In this study, firstly, we review previous studies, interview with experts and prepare effective enablers on bank performance evaluation in order to make appropriate decisions. Since, identification and ranking of performance evaluation enablers is multi-criteria problem, using interpretive structural modeling approach, enablers are ranked. The results of proposed methodology implementation in a case study show the robustness and applicability of proposed model in real situations. Ultimately, the final model of interpretation structure specifies customer satisfaction indices, revenue growth, profitability and market share and due to its inclusion in final model and having more effectiveness on other enablers in present case study, it is the most effective enabler that is due to consider the effectiveness of these agents, therefore it is recommended that Saderat bank managers gain better performance with an emphasis on these factors.

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INTRODUCTION

In fast-moving and competitive today's world, organizations do not have an opportunity to lose their valuable time and other valuable resources and must design their system so that they can apply control and supervision in order to achieve objectives, because the organization that does not compensate their backwardness may have to be witness of others development. Views on domestic and external banks shows that multiple evaluation approaches have substituted with unique measures. Since having high level of performance through improved operations and efficient use of technology and science ensures success in market, managers must know that how is their relative success compared to competitors and the best practice in relation to their productivity. In other words, they need to be aware of their success compared to other similar institutions and their past years. The importance of performance measurement for organizations is specified and it plays an important role in many organizations, now. Performance measurement is the best way to obtain information for decision-making in organizations. Between 1850 and 1975, organizations could be sure on their success only making decisions based on financial measures; however, with increased market competitions, managers need to be aware of other aspects of organization performance as well as financial sizes. Modern business management needs to become aware of performance in order to change organization strategies into action. Traditional data by which organizations evaluate their performance (Information focused on financial statements) are very limited. Ignoring key factor of balanced evaluation such as education and business progress, internal processes, customers, finance (shareholders) who leads an organization to success will result in organization loss [3]. Furthermore, achieving high levels of success and organization excellence requires implementing organizational development and improvement plan. Efforts to improve the performance and quality of goods and services are one of the prerequisites of organization success. Necessity of improving organization performance is regular assessment of activities. Changing nature of work, increasing competition in market, changing role of organization, changing external demands, etc. all add organization dynamic intensity and as a result, these

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developments, models and measures of evaluating organization performance have been changed and have presented new ways of evaluating organization performance [2].

One of these changes is movement from financial indicators to non-financial indicators of performance. Therefore, offering a comprehensive model of performance evaluation indicators can assist organization in achieving its strategic objectives.

Literature:

Performance Evaluation:

Management science scholars have proposed different definitions of performance evaluation system that each of them is treatable. Two comprehensive definitions of performance evaluation can be expressed as follows: Performance evaluation is comprehensive assessment process of executive administrations in terms of efficiency, effectiveness, empowerment and accountability within the framework of management principles and concepts to achieve organizational goals and tasks and in the form of executive programs [3].

The concepts of monitoring and control are separated in the form of a special issue into several topics such as inspection, audit, assessment, self-assessment, supervision, monitor, and report and performance analysis. Performance evaluation of people in line with their behaviors in various areas such as planning, design and implementation in many cases are ignored and they are not aware that all evaluations conducted in organization are people's behavior feedback [4].

Different perspectives of performance evaluation:

In recent years, various views have been proposed in relation to performance evaluation and it may be divided into traditional and modern perspectives. In traditional view, performance evaluation is as a judge and tries to judge administration, while in new viewpoint; performance evaluation is as a consultant and facilitator of performance. In traditional viewpoint, evaluation focused on past performance, while new viewpoint focused on future improvement of operations and organization development and improvement are of basic priorities [5]. Generally, features of two proposed viewpoints can be seen in Table (1).

Table 1: Comparison of different perspectives on performance evaluation [5]

| | The traditional viewpoint | New viewpoint |
|----------------------------------|--|--|
| Specifications: | Focused on judgment | Focused on growth |
| The evaluator role | Judgment and performance measurement | Consultant and facilitator of performance |
| Evaluation period | The past | The future |
| Assessment standards | Organization and superior management views | Self-standardization |
| The main objective of evaluation | Controlling appraise | Growth, guidance and development of appraise capacity |
| Assessment outcomes | Determining and identifying the most successful and awarding financial compensation to directors | Providing consulting services for increasing and continuous improvement of activities (motivation) |
| Interview style after assessment | Command (similar to a trial) | Continuous for improving activity quality and service |
| System Output | Performance control | Development and performance improvement |

The above table indicates that performance evaluation system is based on a new viewpoint for satisfaction, enhancement of performance and effectiveness of organization activities that is not considered in traditional viewpoint.

Organization Performance Evaluation:

From decades ago, management scholars and practitioners have tried to evaluate organizational performance and reflect results in budget process. The starting point of this effort was formed since 1949 through explaining funds performance evaluation by Commission of "Eisenhower in United States and continued through budgeting system plan of Johnson and zero-based budgeting during presidency of Jimmy Carter [3].

Economists and thinkers of Operations Research in 1980 using Farrell theoretical framework of productivity evaluation applied different methods including econometric methods and data envelopment analysis in order to measure the performance of organizations. These methods focused on organization input and output when calculating productivity and did not consider role of internal processes, informal groups as well as customers of organization that are considered critical determinants of organization survival, [3].

Literature on management and performance evaluation of organization is abundant. Many studies have been developed for performance evaluation and each of these studies has introduced indicators for evaluation and has provided ways to measure performance. Table 2 is a summary of these researches.

Table 2: Summary of research in the field of performance evaluation

| References | Topic |
|------------------------|--|
| Bazzaz Jazayeri, 2006 | TEAM Approach in evaluating organization performance |
| Bazzaz Jazayeri, 2003 | Performance Management with an emphasis on organization performance evaluation |
| Faturechi, et al, 2000 | Discussions on personnel evaluation |
| Yuvan et al, 2008 | performance measurement System and observation of employee learning |
| Yan, 2008 | A model based on balanced scorecard to measure organization performance |
| Kiyoing et al, 2009 | Studying performance management of employees in company's R & D sector |
| Kiyoing Zehang, 2010 | Implementation of performance management system for hospital employees with BSC |
| Wang et al, 2010 | The application of employee performance management system in private institutions |
| Chen Wang, 2010 | The application of data monitoring for private institutions performance management |

Indices with frequency higher than 3 were selected from database and are given in table (3), in order to identify the most important indicators.

Table 3: Identified Indicators

| Index | loyalty | Index | loyalty |
|-------------------------|---------|-----------------------|---------|
| Customer Loyalty | 5 | Financial data | 4 |
| Staff skills | 3 | Access to information | 5 |
| Growth in revenue | 4 | Arrangement | 4 |
| Profitability | 4 | Customer Satisfaction | 5 |
| Operational advantages | 5 | Financial Ratio | 4 |
| Development of Services | 6 | Employee satisfaction | 6 |
| Product leadership | 5 | Market share | 6 |
| After sales service | 4 | New services | 5 |

Decision making:

Sometimes decision making is not made by one person, but when decisions are made, there is need to combine several views. Expressed materials will be appropriate for when the number of people who are involved in decision-making is one of them. When the number of decision makers is several people, we can ask any one of them a pair comparison matrix. This means that each individual is separately questioned. Then using the following formula, we can calculate the pair wise comparison matrix elements [6].

$$A_{ij} = \left(\prod_{k=1}^m A'_{ij}{}^{w_k} \right) \sum \frac{1}{w_k}$$

In the above equation, A is pair wise comparison matrix of individuals combined opinions and A' is matrix of opinions and W_k is the weight given to views of each person, in other words, the pair wise comparisons matrix corresponding to people must be weighted geometric mean. Xu in 2000 stated that we can use each of paired comparisons of individual and gain a vector of weights and finally calculate the final weight by weighted geometric mean [7]. But Lin et al in 2008 proved that firstly we must obtain pair wise comparison matrices of people opinions and then, calculate the total weight of elements using the eigenvector method or any other method [6].

Interpretive Structural Modeling (ISM):

Interpretive Structural Modeling first was introduced in 1976 by researcher in this field, called Warfield [1]. Interpretive structural modeling is a technique to analyze the effect of an element on another element. The methodology checks complex relationship between elements of a system, in other words, it is a mean by which group can overcome the complexity of elements [5].

However, this method is only a tool to illustrate the influence and dependence between barriers and to determine the relationship between variables and does not specify weight of barriers [2]. Interpretive structural modeling has been used in several studies and a summary is provided in table (4).

Interpretive structural modeling method is an interactive learning process. This method is suitable for dealing with complex issues, especially when using a systematic and rational thinking is considered. Interpretive structural modeling converts vague and poor mental models into clear and well defined models which are useful for many purposes [6].

Table 4: Application of Interpretive Structural Modeling

| Author | Application context | The country | Year |
|------------------------|---|-------------|------|
| Ravi et al. | Efficiency improvement in supply chain | India | 2005 |
| Bolanus et al. | Strategic group decision-making | Mexico | 2005 |
| Faysal et al | Reduced risk in supply chain | India | 2006 |
| Faysal et al | Information risk management in the supply chain | India | 2007 |
| K. et al. | Improving productivity and competitiveness in supply chain | India | 2007 |
| Charan and Associates | Performance Evaluation of Supply Chain | India | 2008 |
| Kumar et al. | Flexibility in supply chain | India | 2008 |
| K. et al. | Evaluation of logistics service providers | India | 2008 |
| Nantatmvla and Kanvngv | Role of IT and knowledge management in improving management performance | USA | 2008 |
| Sunny et al. | Quality Management in Education | India | 2008 |
| Pandey and Grag | Chaboki enablers in supply chain | India | 2009 |
| Ahuja et al | Adoption of ICT in management of construction projects | India | 2009 |

Research questions:

1. What are the effective measures or enablers evaluating performance of banks?
2. How is the importance of each effective enabler on performance evaluation of banks from experts' point of view?
3. How is drawn the structural model of factors affecting on performance evaluation of banks?

Data analysis methods:

Since the purpose of study is to offer interpretive structural model of effective enablers on performance evaluation of Saderat bank employees in Bushehr. For this purpose, we study relevant literature, opinions of university professors and experts and experts familiar with matter for extracting effective parameters affecting. After collection and refinement of indicators, opinions of experts and university professors familiar with matter must be collected through questionnaires in order to determine the significance of each indicator. Inconsistency rate of individual opinions must be used in order to evaluate the reliability. Since inconsistency rate was less than 0.1, it was concluded that all questionnaires have required reliability.

Interpretive structural modeling techniques are used in order to analyze collected data due to higher capacity than other approaches in solving model. The statistical population consists of all specialists, experts and academics of Bushehr Saderat bank and University professors who could participate in survey required by present case.

Data Analysis:

Identifying effective enablers on performance evaluation of banks

List of effective enablers on performance evaluation of Saderat bank branches was prepared, based on studying literature and expert opinions and experts in present case study. Sixteen effective enablers on performance evaluation of Saderat bank branches were obtained. Table (5) represents the enablers.

Table 5: Identification of effective enablers in evaluating performance of Saderat bank branches

| Row | Enablers | Abbreviation |
|-----|-------------------------|-----------------|
| 1 | Customer Loyalty | S ₁ |
| 2 | Staff skills | S ₂ |
| 3 | Growth in revenue | S ₃ |
| 4 | Profitability | S ₄ |
| 5 | Operational advantages | S ₅ |
| 6 | Development of Services | S ₆ |
| 7 | Product leadership | S ₇ |
| 8 | After sales service | S ₈ |
| 9 | New services | S ₉ |
| 10 | Financial data | S ₁₀ |
| 11 | Access to information | S ₁₁ |
| 12 | Arrangement | S ₁₂ |
| 13 | Customer Satisfaction | S ₁₃ |
| 14 | Financial Ratio | S ₁₄ |
| 15 | Employee satisfaction | S ₁₅ |
| 16 | Market share | S ₁₆ |

Interpretive Structural Modeling:

After detecting enablers, calculations related to interpretive structural modeling are given below to determine the relationships, levels, classification and analysis of enablers.

Forming Structural Self- Interaction Matrix:

As described in interpretive structural modeling steps, after identifying effective enablers on performance evaluation of Bushehr Saderat bank branches, Structural Self- Interaction Matrix will be formed. In this stage, relationship between effective enablers on performance evaluation of Bushehr Saderat bank branches is analyzed using Interpretive Structural Modeling and using four symbols. Symbols used in this section include:

- V: Enabler i help to realization of enabler j.
- A: Enabler j is realized by enabler i.
- X: Enablers i and j are also helpful in their realization.
- O: Enablers i and j are not connected each other.

Structural Self- Interaction matrices for enablers are given in Table (6).

Availability Matrix:

Each Structural Self- Interaction Matrix I changed to binary matrix through converting symbols of 0 and 1 for enablers that is called initial availability matrix. Laws of converting these symbols are as follows.

1. If the input (i, j) (intersection of row i and column j) is in Structural Self- Interaction Matrix, 1 will be given to input (i, j) in availability matrix and 0 will be given to input (j, i).
2. If the input (i, j) is in Structural Self- Interaction Matrix of A, 0 will be given to input (i, j) in availability matrix and 1 will be given to input (j, i).
3. If the input (i, j) is in Structural Self- Interaction Matrix X, 1 will be given to input (i, j) in availability matrix and 1 will be given to input (j, i).
4. If the input (i, j) is in Structural Self- Interaction Matrix O, 0 will be given to input (i, j) in availability matrix and 0 will be given to input (j, i).

Table 6: Structural Self- Interaction Matrix of enablers

| Enablers | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|----------------------------|----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|
| 1. Customer Loyalty | A | V | X | O | V | O | X | O | O | O | O | V | O | A | O | |
| 2. Staff skills | O | A | O | O | V | V | O | X | X | V | A | O | O | O | | |
| 3. Growth in revenue | V | V | O | X | O | O | O | O | O | O | V | O | X | | | |
| 4. Profitability | O | O | V | X | V | O | V | O | O | O | O | O | | | | |
| 5. Operational advantages | O | O | A | O | X | X | O | O | A | X | A | | | | | |
| 6. Development of Services | O | X | O | O | O | O | O | V | V | O | | | | | | |
| 7. Product leadership | O | A | O | O | X | X | O | A | A | | | | | | | |
| 8. After sales service | A | A | O | O | O | V | O | X | | | | | | | | |
| 9. New services | A | A | O | O | V | V | O | | | | | | | | | |
| 10. Financial data | A | V | X | O | V | V | | | | | | | | | | |
| 11. Access to information | O | O | A | O | X | | | | | | | | | | | |
| 12. Arrangement | O | O | O | O | | | | | | | | | | | | |
| 13. Customer Satisfaction | V | V | V | | | | | | | | | | | | | |
| 14. Financial Ratio | A | V | | | | | | | | | | | | | | |
| 15. Employee satisfaction | O | | | | | | | | | | | | | | | |
| 16. Market share | | | | | | | | | | | | | | | | |

Initial and final accessibility matrix:

According to mentioned rules, the initial accessibility matrix is obtained that are shown in Table (7). Final accessibility matrix is obtained though involving transferability. Transferability of conceptual relationships between enablers in Interpretive Structural Modeling is a fundamental assumption. Transferability indicates that if agent A effects on agent B and if agent B effects on C, then A effects on C.

The transferability of final availability matrix is shown in table (7). The matrix is obtained through exponentiation of initial matrix with MATLAB software. In this matrix, influence and dependence of each factor is shown. Influence of each factor is obtained by total effective enablers and factors itself. Dependence of each factor is obtained by total effected enablers and factors itself.

Table 7: Initial availability matrix of enablers

| Enablers | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|----------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| 1. Customer Loyalty | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
| 2. Staff skills | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 3. Growth in revenue | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 4. Profitability | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| 5. Operational advantages | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 6. Development of Services | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 7. Product leadership | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 8. After sales service | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 9. New services | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. Financial data | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| 11. Access to information | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 12. Arrangement | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 13. Customer Satisfaction | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 14. Financial Ratio | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
| 15. Employee satisfaction | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 16. Market share | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |

Table 8: The final availability matrix of enablers

| Enablers | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | Influence |
|----------------------------|---|----|---|---|----|---|----|----|----|----|----|----|----|----|----|----|-----------|
| 1. Customer Loyalty | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 12 |
| 2. Staff skills | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 7 |
| 3. Growth in revenue | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 16 |
| 4. Profitability | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 16 |
| 5. Operational advantages | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 |
| 6. Development of Services | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 9 |
| 7. Product leadership | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 |
| 8. After sales service | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 7 |
| 9. New services | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 7 |
| 10. Financial data | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 12 |
| 11. Access to information | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 |
| 12. Arrangement | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 |
| 13. Customer Satisfaction | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 16 |
| 14. Financial Ratio | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 12 |
| 15. Employee satisfaction | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 9 |
| 16. Market share | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 13 |
| 17. Dependency rate | 7 | 12 | 3 | 3 | 16 | 9 | 16 | 12 | 12 | 7 | 16 | 16 | 3 | 7 | 9 | 4 | |

Segmentation of levels:

At this stage, using the final availability matrix, the input and output set of effective enabler on performance evaluation of Bushehr Saderat bank is obtained. Output set of each enabler includes empowerment that affects them and input set of each enabler includes self-enablers. After determining the input and output set, the subscription of these sets for each enabler is determined. The common set of each enabler is obtained.

Table 9: iteration of sub- enabler

| Enabler | Output set | Input set | Common set | Level |
|---------|--|--|------------|-------|
| 1 | 1,2,5,6,7,8,9,10,11,12,14,15 | 1,3,4,10,13,14,16 | 1,10,14 | |
| 2 | 2,5,8,9,7,11,12 | 1,2,3,4,6,8,9,10,13,14,15,16 | 2,8,9 | |
| 3 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 3,4,13 | 3,4,13 | |
| 4 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 3,4,13 | 3,4,13 | |
| 5 | 5,7,11,12 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 5,7,11,12 | 1 |
| 6 | 2,5,6,7,8,9,11,12,15 | 1,3,4,6,10,13,14,15,16 | 6,15 | |
| 7 | 5,7,11,12 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 5,7,11,12 | 1 |
| 8 | 2,5,7,8,9,11,12 | 1,2,3,4,6,8,9,10,13,14,15,16 | 2,8,9 | |
| 9 | 2,5,7,8,9,11,12 | 1,2,3,4,6,8,9,10,13,14,15,16 | 2,8,9 | |
| 10 | 1,2,5,6,7,8,9,10,11,12,14,15 | 1,3,4,10,13,14,16 | 1,10,14 | |
| 11 | 5,7,11,12 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 5,7,11,12 | 1 |
| 12 | 5,7,11,12 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 5,7,11,12 | 1 |
| 13 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 3,4,13 | 3,4,13 | |
| 14 | 1,2,5,6,7,8,9,10,11,12,14,15 | 1,3,4,10,13,14,16 | 1,10,14 | |
| 15 | 2,5,6,7,8,9,11,12,15 | 1,3,4,6,10,13,14,15,16 | 6,15 | |
| 16 | 1,2,5,6,7,8,9,10,11,12,14,15,16 | 3,4,13,16 | 16 | |

Enabler whose total output and input is quite similar (such enablers of 5, 7, 11, and 12) are at the highest level of interpretive structural model hierarchy. As can be seen in Table 12, enabler such as operational advantages, product leadership, access to information, and Arrangement is at level 1. When the elements of highest level were identified in the first iteration, these elements must be separated from other elements or eliminated, in other words. In this stage, 6 iterations were done for enabler that is shown in table (10). After determining the level of enablers, conical matrix is formed. Conical matrix is obtained through rearrangement of availability matrix elements and with respect to the levels of elements. The matrix is shown in table (11)

Table 10: Iteration of 2-6 enablers

| Iteration | Enabler | Output set | Input set | Common set | Level |
|-----------|---------|------------|------------------------------|------------|-------|
| 2 | 2 | 2,8,9 | 1,2,3,4,6,8,9,10,13,14,15,16 | 2,8,9 | 2 |
| 2 | 8 | 2,8,9 | 1,2,3,4,6,8,9,10,13,14,15,16 | 2,8,9 | 2 |
| 2 | 9 | 2,8,9 | 1,2,3,4,6,8,9,10,13,14,15,16 | 2,8,9 | 2 |
| 3 | 6 | 2,6,8,9,15 | 1,3,4,6,10,13,14,15,16 | 6,15 | 3 |
| 3 | 15 | 6,15 | 1,3,4,6,10,13,14,15,16 | 6,15 | 3 |
| 4 | 1 | 1,10,14 | 1,3,4,10,13,14,16 | 1,10,14 | 4 |
| 4 | 10 | 1,10,14 | 1,3,4,10,13,14,16 | 1,10,14 | 4 |
| 4 | 14 | 1,10,14 | 1,3,4,10,13,14,16 | 1,10,14 | 4 |
| 5 | 16 | 16 | 3,4,13,16 | 16 | 5 |
| 6 | 3 | 3,4,13 | 3,4,13 | 3,4,13 | 6 |
| 6 | 4 | 3,4,7,13 | 3,4,13 | 3,4,13 | 6 |
| 6 | 13 | 3,4,13 | 3,4,13 | 3,4,13 | 6 |

The above table shows that since enablers 2, 8 and 9 are in common set and output, they are similar, therefore, they are at highest level of interpretive structural model hierarchy of second stage.

Table 11: Conical Matrix of enablers

| Enabler | 5 | 7 | 11 | 12 | 2 | 8 | 9 | 6 | 15 | 1 | 10 | 14 | 16 | 3 | 4 | 13 |
|----------------------------|---|---|----|----|---|---|---|---|----|---|----|----|----|---|---|----|
| 5. Operational advantages | 1 | 1 | 1 | 1 | | | | | | | | | | | | |
| 7. Product leadership | 1 | 1 | 1 | 1 | | | | | | | | | | | | |
| 11. Access to information | 1 | 1 | 1 | 1 | | | | | | | | | | | | |
| 12. Arrangement | 1 | 1 | 1 | 1 | | | | | | | | | | | | |
| 2. Staff skills | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | |
| 8. After sales service | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | |
| 9. New services | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | |
| 6. Development of Services | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | |
| 15. Employee satisfaction | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | |
| 1. Customer Loyalty | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 10. Financial data | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 14. Financial Ratio | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| 16. Market share | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| 3. Growth in revenue | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 4. Profitability | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 13. Customer Satisfaction | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

As shown in above table, enablers that are at the same level will be adjacent to each other in final availability matrix and conical matrix will be formed. For example, enablers 5, 7, 11 and 12 whose total output and common set is quite similar are at first level of interpretive structural model hierarchy and will be adjacent to each other in final availability matrix.

Interpretive Structural Model Formation

Conical matrix is used in the formation of interpretive structural model. The initial structural interpretation model is plotted with regard to transferability. The final structural interpretation model is formed by removing transferability. The final model of enablers is shown in figure (1).

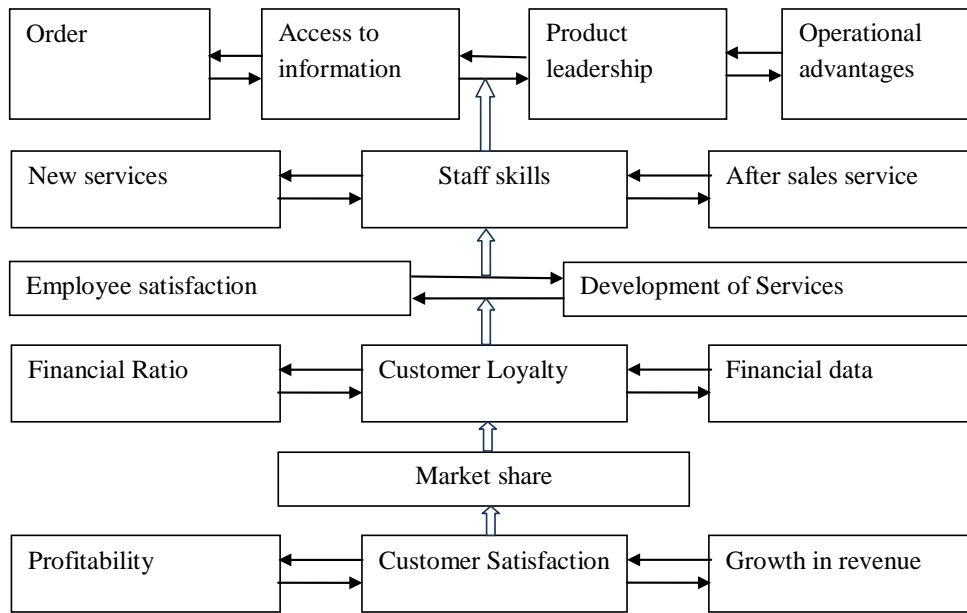


Fig. 1: The final interpretive structure model of effective enabler on performance evaluation of bank

As shown in above figure, enablers 5, 7, 11 and 12 whose total output and common set is quite similar are at first level of interpretive structural model hierarchy. Enablers that are at base level of interpretive structural model (such revenue growth, customer satisfaction and profitability) must be considered more by managers because they are root factors and effect on other factors.

MICMAC Analysis:

The aim of this section is to analyze the influence and dependence of enablers. At this stage, enablers are classified in four groups. The first group includes autonomous enablers’ autonomous (region 1) that have weak influence and dependence. These enablers are somewhat distinct from other enablers and have little relevance. The second group includes dependent enablers (region 2) that have weak influence and high dependence. The third group includes Linkage enablers (region 3). These enablers have high influence and high dependence. In fact, any action on these enablers will result in changes of other enablers.

| | | | | | | | | | | | | | | | | | |
|-----------------|----|----------|----|-------|----|----|---|---------|---|---|---|----|----------|---|---|--|-----------------|
| | | | | | | | | | | | | | 3,4,13 | | | | 16 |
| | | | | | | | | | | | | | | | | | 15 |
| | | | | | | | | | | | | | | | | | 14 |
| | | | | | | | | | | | | 16 | | | | | 13 |
| | | Region 3 | | | | | | 1,10,14 | | | | | Region 4 | | | | 12 |
| | | | | | | | | | | | | | | | | | 11 |
| | | | | | | | | | | | | | | | | | 10 |
| | | | | | | | | 15,6 | | | | | | | | | 9 |
| | | | | | | | | | | | | | | | | | 8 |
| | | | | 9,8,2 | | | | | | | | | | | | | 7 |
| | | | | | | | | | | | | | | | | | 6 |
| | | Region 2 | | | | | | | | | | | | | | | 5 |
| 12,11,7,5 | | | | | | | | | | | | | | | | | 4 |
| | | | | | | | | | | | | | | | | | 3 |
| | | | | | | | | | | | | | | | | | 2 |
| | | | | | | | | | | | | | | | | | 1 |
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |
| Dependence rate | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | Influence power |

Fig. 2: Diagram of influence- dependence of enablers

The fourth group includes independent enabler (influencing) and (region 4). The enabler has high influence and low dependence. Enablers that have high influence are called key enablers. It is clear that the enabler is in either independent or linkage group. Influence and dependence of enablers of Bushehr bank performance

evaluation is shown in Figure 2. In this Table, influence and dependence of enablers are obtained through collecting 1 input at each row and column. Accordingly influence- dependence graph is formed.

Results:

1. What are the effective measures or enablers evaluating performance of banks?

In the present study, reviewing the literature and interview with experts and academics, effective factors on performance evaluation of Bushehr Saderat bank branches include customer loyalty, employee skills, growth in revenue, profitability, operational benefits, services, product leadership, after sales services, offering new services, financial data, access to data, Arrangement, customer satisfaction, financial ratios, employee satisfaction and market share. It must be noted that these factors will be selected among indices in literature for more iteration.

2. How is the importance of each effective enabler on performance evaluation of banks from experts' point of view?

In the present study, firstly, we review the effective enablers on performance evaluation of Bushehr Saderat Bank. Then, we calculated the relative importance of each enabler through receiving experts' views and using interpretive structural modeling techniques. In the present case study, the index of "effectiveness on other factors" has been used. Therefore, according to this analysis, indicators of customer satisfaction, revenue growth, profitability and market share are considered as most efficient enablers due to more effectiveness on other enablers and being at base level of interpretive structural modeling (Figure 1). For this purpose, in table (12), the priority of enablers is given.

Table 12: Prioritization of enablers

| Priority | Enabler |
|----------|-------------------------|
| 1 | Growth in revenue |
| | Profitability |
| | Customer Satisfaction |
| 2 | Market share |
| 3 | Customer Loyalty |
| | Financial data |
| | Financial Ratio |
| 4 | Development of Services |
| | Employee satisfaction |
| 5 | Staff skills |
| | After sales service |
| | New services |
| 6 | Operational advantages |
| | Product leadership |
| | Access to information |
| | Arrangement |

3. How is drawn the structural model of factors affecting on performance evaluation of banks?

Conical matrix was calculated in order to plot structural model of performance evaluation of enablers in Bushehr Saderat Bank and then conical matrix was used in creation of interpretive structural model. The final model is shown for enablers in Figure 3.

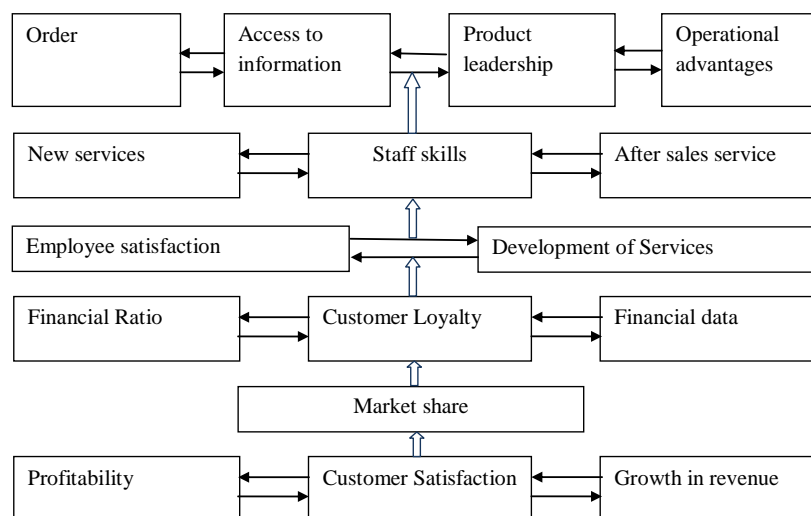


Fig. 3: The final interpretive structural effective model on bank performance evaluation

Suggestions:

➤ There is no measure at independent level, as is clear from the influence- dependence matrix. This region includes actually a measure that has low influence and dependence. Measures such as employee skills, operational advantage, and product leadership, after sales service, new services, arrangement, and access to information are among measures that have low influence and high dependence. As can be seen in the Interpretive Structural Model, these measures are at higher levels and dependent group. In fact, managers of organizations must find roots of measures when face such measures. There is no linkage in linkage measure group. As already noted, these measures have high dependence and influence. The influence– dependence matrix shows that measures such as customer loyalty, profitability, development services, financial data, financial ratios, customer satisfaction, employee satisfaction, and market share and growth revenue are at independent measures level. These measures have high influence and are at lower levels. In other words, these measures can be called radical measures. Any changes in these measures will certainly influence on higher level measures. It is suggested that managers must focus their attention on these measures.

➤ According to final interpretive structural model, it is determined that indicators of profitability, customer satisfaction and market share are important due to being at base model, then, it is recommended that managers upgrade any of items so that they can increase Bank 's performance. For example, they can act to enhance customer satisfaction, quality of provided services and meet customers' expectations.

➤ According to final interpretive structural model and because of importance of indicators such as profitability, customer satisfaction, market share, is proposed that they are considered as study axis for more studies in order to improve mentioned components.

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