

Importance-Performance Analysis (IPA) on Factors Affecting Agility of Iranian Auditing Organizations

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Abstract

Many auditors are now encountering agile management methodologies for the first time. In some cases, this can cause problems for the audit process because the methodology is very different from traditional approaches. Aside from the difficulties faced by the auditor, an ineffective audit can have a negative effect on an agile project by giving a false impression of its progress. Much has been written on agility issues in organizations of various sizes. However, there have been very few studies that attempt to delineate critical issues that drive importance-performance analyzing (IPA) among an organization. This paper aims to propose an Importance-Performance Analysis (IPA) on Factors Affecting Agility of Iranian Auditing Organizations.

Keywords: Agility, Auditing, DEMATEL, Importance-Performance Analysis (IPA)

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Introduction

Each day, we are faced with projects – big or small – that must be completed. Our audits are a project and each person on the team must complete their assignments and tasks to meet audit deadlines. But, there is a better way to manage our audit projects. Through Agile auditing you will improve audit delivery time, give better customer service, solve corporate problems and issues faster, and reduce rework and waste. In short, you will be able to do more with less. Modern industry has brought a number of facilities,

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conveniences and new attitude to answer mankind's needs. It is accepted that the world has become a global village with interconnectivity of businesses taking place across the globe (Hamid, 2014, p. 330). In this village what gets important is a quick, effective, correct, creative answer to the consumer's need that is so called "agility" (Mohammadi and Amiri, 2013, p.116; Salimi *et al.*, 2014, p.117). Agility is a major preoccupation for both managers and academic researchers. Yet, many questions remain unanswered about how best to achieve this operational capability (Brusset, 2016, p.47). Agility increases not only the organizations' product-providing ability but also high efficient services, so it has become an important factor in organizations' productivity (salajegheh and nikpour, 2011, p.171). It might even harm the final project outcome. Written for auditors and agile managers, Agile Governance and Audit bridges the gap between traditional auditing approaches and the requirements of agile methodologies. It provides an overview of Agile for auditors and other risk professionals who have not encountered the approach before.

This paper tries to analyze factors affecting agility of Iranian auditing organizations using Importance-Performance Analysis (IPA). So, by presenting proper strategies, we aim to

- ✓ Create meaningful, realistic, and achievable auditing agility model.
- ✓ Overcome typical obstacles encountered during the audit life cycle.
- ✓ Complete audit project and reduce audit cost.
- ✓ Promote and improve the agility level in Iranian auditing organizations.

Literature Review

The paradigm of agile production and the subject of agility, being defined in different ways by industrial experts, were first, in a report titled as the strategies of productive institutions in twenty-first century, introduced by the studies of Lacoca institution in 1991. Regarding the most common definition, the agility is not only the ability to make fast and effective decisions regarding the present and future market demand conditions but also the ability to develop and reconstruct active market while facing great competitive forces (Asif Hasan *et al.*, 2012, p.899). Peter Draker was the first one proposing the concept of agile organization which was immediately used by public (Purvis *et al.*, 2014, p.101).

Yousef *et al.* (2015) have discussed the agility of supply chain, the effective factors on agility of the organizations of oil, gas, and petrochemical industry, and the related level of agility developing.

Saleeshya (2014) have also evaluated the agility of supply chain using Analytical Hierarchy Process AHP technique, has ranked the effective factors. Furthermore; it is noteworthy that the presented model included 16 dimensions with 75 types.

Identifying critical factors to achieve organizational agility is still a concern of many researchers as Sangari *et al.* (2015) presenting a theoretical framework, tried to identify and rank the basic effective factors.

Agility performance in organization is impacted by practical implication of collaboration and it can have positive, negative or neutral effect on the levels of trust,

supplier asset specificity and requirements certainty that is an issue Schoenherr et al. (2015) workaroud a research “Assessing the contingent effects of collaboration on agility performance in buyer–supplier relationships

Methodology

First, studies related to the research field were reviewed comprehensively, then, using the top managers and the active experts' opinions, factors affecting Iranian auditing organizations agility were identified. According to the previous studies, the most important and frequently-repeated factors affecting organizations agility are shown in the table 1.

Table1 The Most Important and Frequently-Repeated Affecting Organizations Agility

Factor	Reference
Top Managers' Vision	Sanjari <i>et al.</i> (2015); Saleeshya (2014);Ahn <i>et al.</i> (2012);Saleeshya <i>et al.</i> (2012); Mirbagheri (2012)
Integration	Sanjari <i>et al.</i> (2015); Hasan <i>et al.</i> (2012); Mirbagheri (2012);Ngai <i>et al.</i> (2011); Agarwal <i>et al.</i> (2007)
Human Resource	Gilgor <i>et al.</i> (2015); Sanjari <i>et al.</i> (2015); Yusuf <i>et al.</i> (2014); Malekian and Fekri (2013); Hasan <i>et al.</i> (2012);Mirbagheri (2012); Saleeshya (2014); Ngai <i>et al.</i> (2011) <i>et al.</i> (2011)
Flexibility	Gilgor <i>et al.</i> (2015); Yusuf <i>et al.</i> (2014);Sayyadi and Jamali (2011); Kazazi and Sohrabi (2010);Agarwal <i>et al.</i> (2007); Lin <i>et al.</i> (2006)
Responding Speed	Agarwal <i>et al.</i> (2007); Hasan <i>et al.</i> (2012);Mirbagheri (2012); Yusuf <i>et al.</i> (2014); Salajeghe <i>et al.</i> (2011); Purvis <i>et al.</i> (2014)
Cost	Gilgor <i>et al.</i> (2015); Ahn <i>et al.</i> (2012);Agarwal <i>et al.</i> (2007); Lin <i>et al.</i> (2006)
Innovation and Learning	Sanjari <i>et al.</i> (2015); Yusuf <i>et al.</i> (2014); Saleeshya <i>et al.</i> (2012);Sayyadi and Jamali (2011)
Continuous Improvement	Yusuf <i>et al.</i> (2014); Malekian and Fekri (2013); Mirbagheri (2012); Sayyadi and Jamali (2011);Balasubramanian (2011)
Integration of Strategies	Sanjari <i>et al.</i> (2015); Malekian and Fekri (2013); Saleeshya <i>et al.</i> (2012); Ngai <i>et al.</i> (2011)
Recognizing Customer's Requirements	Saleeshya <i>et al.</i> (2012);Sayyadi and Jamali (2010);Sanjari <i>et al.</i> (2015)
Sensitivity to Market and Customers	Sayyadi and Jamali (2010); Balasubramanian (2011); Christopher and Towill (2001);
Customers' Satisfaction	Yusuf <i>et al.</i> (2014); Ngai <i>et al.</i> (2011); Balasubramanian (2011); Sayyadi and Jamali (2010); Kazazi and Sohrabi (2010)
Information Infrastructures	Liu <i>et al.</i> (2013) Malekian and Fekri (2013); Sayyadi and Jamali (2010); Christopher and Towill (2001)
Information Access	Sanjari <i>et al.</i> (2015); Liu <i>et al.</i> (2013);Balaji <i>et al.</i> (2012); Balasubramanian (2011);Kazazi and Sohrabi, (2010)
Technological Innovations	Purvis <i>et al.</i> (2014); Saleeshya <i>et al.</i> (2012);Ngai <i>et al.</i> (2011); Kazazi and Sohrabi (2010)

So the research conceptual model can be shown in figure 1.

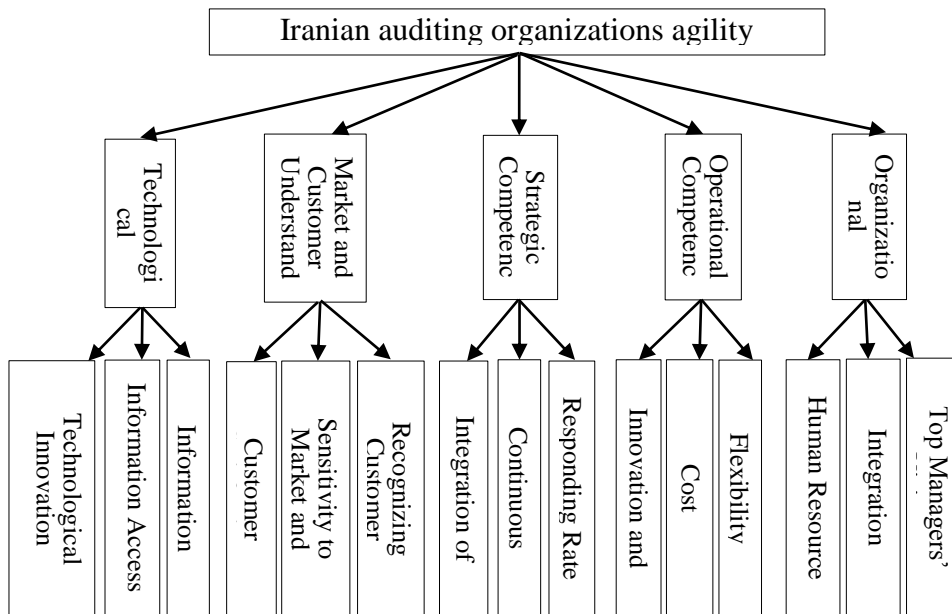


Fig 1 The Research Conceptual Model

Data analysis

Figure 2 shows factor loadings for each index resulted from LISREL software.

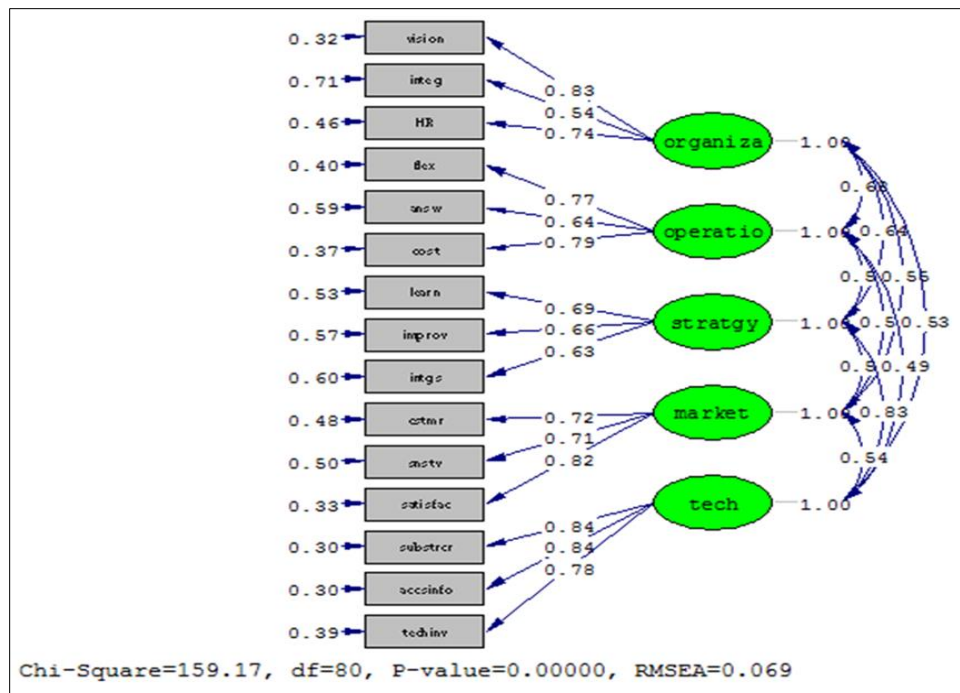


Fig 2 Factor Loadings for each Index

Also the results of evaluating the conceptual model are shown in the table 2.

Table 2 Goodness of Model Fitting Indices

Fitting Index		The resulting value	Optimum value
χ^2/df	Chi-square/degree of freedom	1.98	≤ 3
RMSEA	Root Mean Square Error of Approximation	0.069	≤ 0.09
RMR	Root Mean Square Residual	0.0991	about 0
AGFI	Adjusted Goodness of Fit Index	0.862	≥ 0.8
NFI	Normed Fit Index	0.945	≥ 0.9
NNFI	Non-Normed Fit Index	0.963	≥ 0.9
CFI	Comparative Fit Index	0.971	≥ 0.9
GFI	Goodness of Fit Index	0.908	≥ 0.9
DF	Degree of Freedom	80	

DEMATEL Technique

Applying DEMATEL technique, first, experts requested to score by means of pair comparison between factors. The arithmetic average calculated due to the experts' opinions (effect average matrix) and, then, the primary effect matrix (D) obtained from the following formula:

$$[d_{ij}]_{n \times n} = S[a_{ij}]_{n \times n} \quad (1)$$

$$S = \min \left\{ \frac{1}{\text{Max Total number of columns}}, \frac{1}{\text{Max Total number of rows}} \right\} \quad (2)$$

$$1/S \times A = D \text{ Matrix} \quad (3)$$

Then the total effect matrix (T) according to the following formula is: (Jamali and Hashemi, 2012, p.28)

$$T = D(I - D)^{-1} \quad (4)$$

The results of DEMATEL technique are shown in the table 3.

Table 3 Results of DEMATEL Technique

Factor	D	R	D-R	D+R
Top Managers' Vision	11.04	10.84	0.204	21.87
Integration	11.36	11.316	0.066	22.69
Human Resource	10.69	11.279	0.59	21.96
Flexibility	11.55	11.33	0.22	22.88
Responding Speed	11.38	11.53	0.05	22.91
Cost	11.50	11.76	0.26	23.26

Innovation and Learning	11.75	11.73	0.02	23.47
Continuous Improvement	10.33	11.04	0.71	21.38
Integration of Strategies	11.03	11.04	0.02	22.07
Recognizing Customer's Requirements	11.46	11.73	0.27	23.18
Sensitivity to Market and Customers	12.22	10.97	1.26	23.19
Customers' Satisfaction	11.26	10.91	0.36	22.17
Information Infrastructures	11.28	10.88	0.40	22.17
Information Access	10.86	11.28	0.42	22.14
Technological Innovations	11.08	12.90	0.10	23.97

Importance-Performance Analysis (IPA)

Now, the Importance-Performance Analysis (IPA) method (Azizi, *et al.*, 2014, p.142) is applied in order to organize the improvement-strategies-presenting factors and rank the strategies.

Considering the load factor level, obtained from evaluating the model by means of LISREL software, (D-R) values, obtained through DEMATEL regarding the $I_{ci} = I_i + (D_i - R_i)$ formula (Hu *et al.*, 2009, p.9973) the primary importance values for factors' load importance is used. After calculating I_{ag} , in order to determining the indexes' importance, the values were normalized. We used the experts' opinions to calculate the performance level. The results of IPA are shown in table 4 (Y axis = Normalized Important, X axis = Normalize Performance, I= Factor Loadings).

Table4 The Results of Importance-Performance Analysis (IPA)

Factors	(I)	D-R	I+(D-R)	Y-axis	X-axis
Top Managers' Vision	0.83	0.20	1.03	0.08	0.07
Integration	0.54	0.06	0.60	0.05	0.07
Human Resource	0.74	0.59	0.15	0.01	0.03
Flexibility	0.77	0.22	0.99	0.08	0.03
Responding Speed	0.64	0.05	0.70	0.08	0.03
Cost	0.79	0.26	0.95	0.08	0.03
Innovation and Learning	0.69	0.02	0.71	0.06	0.07
Continuous Improvement	0.66	0.71	0.05	0.05	0.07
Integration of Strategies	0.63	0.02	0.6	0.05	0.06
Recognizing Customer's Requirements	0.72	0.27	0.89	0.07	0.08
Sensitivity to Market and Customers	0.71	1.26	1.97	0.16	0.06
Customers' Satisfaction	0.82	0.36	1.18	0.01	0.08
Information Infrastructures	0.84	0.40	1.249	0.10	0.06
Information Access	0.84	0.42	0.42	0.04	0.08
Technological Innovations	0.78	0.10	0.87	0.09	0.05

Outlining the Importance-Performance Analysis (IPA) Matrix

The IPA matrix can be outlined shown in figure 3.

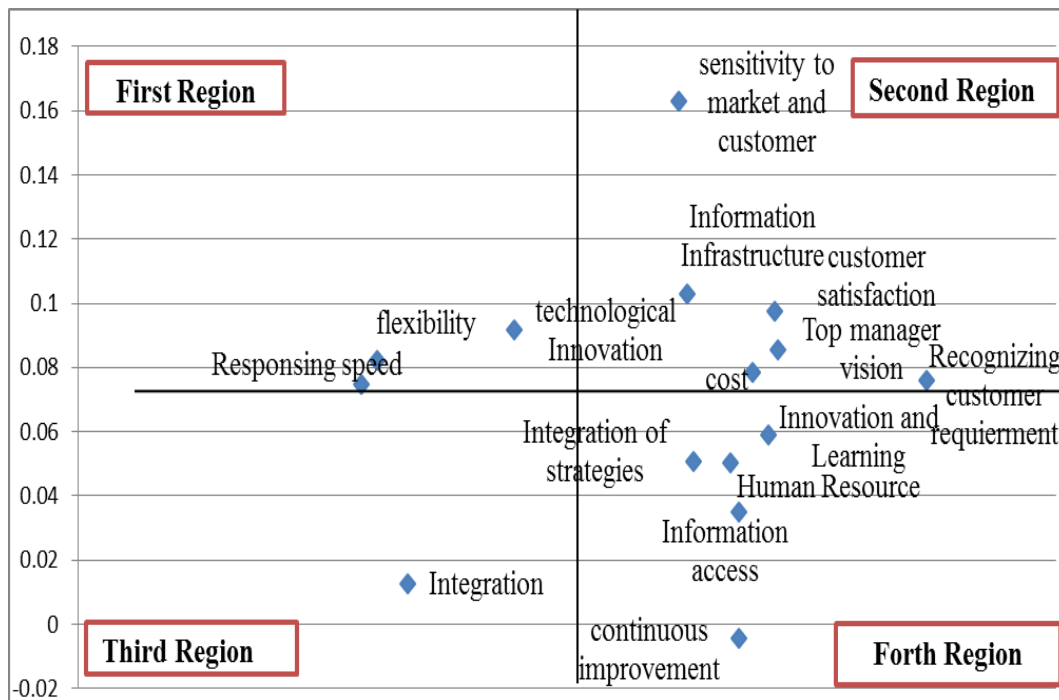


Fig 3 The Importance-Performance Analysis (IPA) Matrix

As shown in the figure 3 factors such as responding speed, flexibility, and technological innovations are located in the first region, representing that the mentioned factors are important to promote the agility level in Iranian auditing organizations. However; the observed organizations, in terms of factors' function, have performed poorly. Actually, the basic weakness of the observed organizations is lack of proper function regarding responding speed, flexibility, and technological innovations. Hence; the best strategy is to pay more attention so that we make sure that the mentioned factors are improved and developed. Factors of sensitivity to market and customers, customers' satisfaction, top managers' vision, cost and information infrastructures, and recognizing the customer's requirements are located in the second region, representing that the factors are so important. It is noteworthy that the observed organizations have done well on these factors' function. So, they should continue doing the same in terms of these factors. The factor located in third region is integration. This factor is not of a great importance, so although the observed companies' integration-related function has been poor, it's not necessary for the observed companies to spend more and attention on integration. In addition, innovation and learning, integration of strategy, personnel qualification, level of information access, and continuous improvement are located in the fourth region or the resource waste region, clarifying that the specialized resources of the factors are more than required amount, so it's better to be used these elsewhere.

Conclusion

In this paper, the important factors of Iranian auditing organizations agility were identified and analyzed using IPA method. It became clear that not only the factors of sensitivity to market and customers, customers' satisfaction, top managers' vision, cost and information infrastructures, and recognizing the customer's requirements were important but also they were being paid adequate attention in the observed organizations. However; despite the fact that factors such as responding speed, flexibility, and technological innovations were important, they weren't being paid enough attention. So, the Iranian auditing organizations must pay more attention to the

factors of responding speed, flexibility, and technological innovations. Also, they should reduce the specialized sources to the factors conclude: innovation and learning, integration of strategy, personnel qualification, level of information access, and continuous improvement.

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