



Investigating the Relationship Between Organizational Agility Stimuli and Organizational Agility Capabilities in Iran's Mining Industry

Amir Tavakoli*¹; Arash Shahin²; Seyed Akbar Nilipour Tabatabaei³

¹ Department of Human Resources Management, Quality Management Research Group, Isfahan University, Isfahan, Iran

² Department of Management, Isfahan University, Isfahan, Iran

³ Department of Faculty of Management, Malek Ashtar University of Technology, Isfahan, Iran
Email: Amir1_tavakoli1980@yahoo.com

Abstract

The purpose of this study was to investigate the relationship between organizational agility stimuli and organizational agility capabilities in Iran's mining industry. Therefore, to identify the dimensions and features of organizational agility stimuli and organizational agility capabilities in the mining industry, these dimensions were determined. This survey is a descriptive study and content analysis (review of existing status) that was conducted using an organizational survey of library or documentary studies and analysis of initial data. We used the viewpoints of 10 expert professors, prominent experts in agility and industry and mining experts (senior and middle managers) by Delphi method, in order to determine the components of agility (stimuli and capabilities). The statistical population of this study was all the staff of Iron Ore Sangan and Chadermolou centers that are active in the Iran's mining industry. The result of the research shows a significant relationship between the dimensions of organizational agility stimuli (need for agility, strategic design and agility strategy) and organizational agility capabilities. The results of the research based on the provided agility model indicate that there is a meaningful relationship between organizational agility stimuli and organizational agility capabilities.

Keywords: Organizational Agility; Mining Industry; Organizational Agility Stimuli; Organizational Agility Capabilities

Introduction

Today, the importance of mineral's role in advancing human societies in various economic sectors is well-defined and is considered as the growth and development factors of industries. The mineral reserves of each country are important from two perspectives: first, optimal utilization of mineral resources in order to increase gross domestic products (GDP), which in turn increasing the per capita income of a country, creating employment and economic transformation. Second, supplying raw materials for many domestic industries, which their activities will have a direct and major effect on the country's industrial independence (Tavakoli). As a result, to achieve this goal, the country's mineral industry is in

the forefront of supporting steel industry and this shows the necessity of creating agility in mining industry. Therefore, the need to implement an agile organizational structure to compete self-sufficiency in the region and steel industry is felt more and more in the future. So, survival and prosperity in these turbulent situations will be possible when organizations have the basic capabilities to understand their changing environments and the proper response to any unexpected changes.

Today, many organizations and companies are faced with increasingly uncertain competition that has intensified through technological innovations, changing market environments, and changing customer needs. This critical situation has led to major reforms in the strategic vision of the organization, business priorities, and the revision of traditional models and even relatively contemporary models (Jafarinezhad and Shahai, 2007).

In fact, extensive and continuous changes in the environment face the organizations with new challenges. This has led many organizations to revise their business priorities and strategic perspectives, and to emphasize on adaptability in order to change and respond quickly to market and customer needs through new collaborative approaches. "**Agility**" is one of the ways for responding to the factors of organizational changes and success in this environment. This term was first used in 1991 to describe the capacity needed for modern production (Shaye, 2006). These definitions generally indicate the idea of "speed and change in the business environment". Despite the many definitions of agility, none of them is opposed and violate each other. But, given the novel agility debate, there is no comprehensive definition that is universally approved. The root of the agility concept is the agile production that can be understood as the organizational integrity, the existence of knowledgeable and skillful personnel and advanced technology in order to achieve innovation and collaboration for responding to customer needs. Caye (2000) states that we can consider the agile production as a structure in the company which has the ability to expand products and business strategies. The advocates of the agility paradigm at the Yakoka Institute (Lijin hai et al., 2003) defines the agility production as: a highly productive system with extra capabilities (Internal capabilities such as hardware and software technology, human resources and skillful management) to reach rapid and immediate changes in the market, (including speed, flexibility, customers and responsiveness). In the other words, a productive system that, ideally in real time, converges between product models quickly (speed and response) or between the lines of production (flexibility) and responds customer demands and desires (customer needs), is called the agile production system.

Due to the newness of agility discussion, there is no definition that is universally accepted. However, several definitions points to features such as the ability to respond quickly in the face of sudden and unpredictable changes (Goldman and colleagues 1995, Van Ossand et al. 2001) and the ability to survive in an environment with constant and unpredictable change (Maskle 20018, Rig Bai et al., Richard, 1996 and Dow 2001).

So, agility means the ability to respond quickly and successfully to environmental changes. Sharifi and Zhang (1999) argue that agility is a necessary capability for business survival in a variable dynamic and competitive world, and also the ability of any organization to perceive and anticipate changes in the working environment. Organizations must be able to identify environmental changes and see them as factors of growth and flourishing. Moreover, agility is the ability to overcome unexpected challenges for confronting with unprecedented threats of workplace and gaining the benefits and advantages of the changes, as the opportunities for growth and development (Sharifi and Zhang, 1999).

This research tries to emphasize on: the importance of the country's mineral industry and its effects on the strategic development of increasing the productivity; agile production in mining industry with support of steel industry; and other impacts on economic development and creating job and business spaces; and concept of agility and its capabilities to increase agility production capacity in a changing

business environment for the country's mineral industry. In fact, the result of the research model has the capability to develop and extend the model and to generalize it to Iran's mineral industry.

This study points to the importance of the practical utilization of research results more than ever, with regard to the necessity of the organizational agility in the mining industry. In this research, by achieving the rank and the importance of the dimensions and components of organizational agility, we will show that organizational agility stimuli can affect the competitive advantage like stimulating and persuading, by making changes in the business environment to find a new position and organizational agility. In fact, this research tries to determine the dimensions of organizational agility in mineral industry, including organizational agility stimuli and agility capabilities, in addition to determining the degree of importance and weight of each of these dimensions, as well as the importance of the components and items, to understand the relationship between the components and examine the impact of them on each other.

In other words, the analysis of the results leads to the results of the developed model test and determination of improvement priorities, which can bring important solutions and suggestions for the senior managers of the mining industry; and we will hope that the result of this research will be an effective strategy for agility in the mineral industry.

The feedback of this goal makes it easy for managers to outline the prospect of the mining industry and focus on the process of allocating resources for making the necessary changes. The results of the research will bring achievements that can be an indicator of organizational agility in the mineral industry and senior and middle managers can take the basic steps towards the organizational agility of the mining industry using the strategies derived from this research.

Methodology

This research is a descriptive survey and content analysis (review of existing status) that is conducted using an organizational survey of library or documentary studies and analysis of initial data. The aim of the study was to investigate the relationship between organizational agility stimuli and organizational agility capabilities in Iran's mining industry. Therefore, in order to identify the dimensions and items of organizational agility stimuli and organizational agility capabilities in the mining industry, it is first necessary to determine these dimensions. As a result, we used the library method and reviewing the existing documents with the field method simultaneously. The necessary information about the topic is available from the magazines, books and articles in the field of agility, organizations and the website.

In order to determine the components of agility (stimuli and capabilities), we used from the opinions of expert professors, dominated in agility, and industry and mining experts (senior and middle managers). Based on Robben's proposal (1995), number of members of the decision group can be between 5 to 50 people. Therefore, in this research, the views of ten managers and specialized experts with non-random selection were used to conduct the Delphi method. In fact, targeted sampling involves the collection of information from members of the community that are available for providing information. In other words, information is gained from special individuals or groups for the research, which are certain types of people who are able to provide the information we want, because they are the only people who can provide such information. They are either matched with some of the criteria that are considered in the research, and are selected based on the objectives of the study. The statistical population of this research is all the personnel of Iron Ore Sangan and Chadermolou center who are active in the mining industry in Iran. The number of personnel at the time of the research was 3262. Among them, 399 subjects were selected by stratified sampling method as sample population using Cochran's formula proportional to the sample size.

In this study, two questionnaires were designed to collect the required data that identified the components of organizational agility stimuli and organizational agility capabilities based on the Delphi method with the knowledge of the experts of the country's mining industry.

Organizational agility stimuli Questionnaire consists of 3 components and 15 questions.

Table 1 Distribution of questions in questionnaires of organizational agility stimuli and sub-indexes based on dimensions

	Dimensions	Number of questions	Question No.
1	Need for agility	5	1-2-3-4-5
2	Strategic design	7	12-6-7-8-9-10-11
3	Agility approach	4	13-14-15-16

Organizational agility capabilities questionnaire was designed including 10 components and 40 questions to emphasize on factorial analysis of considering the relationship between organizational agility stimuli and organizational agility capabilities in the mining industry in Iran.

Table 2 The distribution of the questions in the questionnaires of organizational agility capabilities and sub-indexes based on dimensions

	Dimensions	Number of questions	Question No.
1	Integration	4	1-2-3-4
2	Competency	4	5-6-7-8-
3	Team building	5	9-10-11-12-13
4	Technology	5	14-15-16-17-18
5	Quality	4	19-20-21-22
6	Change	5	23-24-25-26-27
7	Participation	4	28-29-30-31
8	Market	2	32-33
9	Training	5	34-35-36-37-38
10	Welfare and happiness	2	39-40

-Validity The content validity method was used to determine the validity of the organizational agility stimuli questionnaire and organizational agility capabilities questionnaire (Delphi method and views of experts in the country's mining industry).

- Reliability or Credibility The reliability of the questionnaire used in this research has been evaluated using Cronbach's alpha coefficient. The value ranges from 0 to 1.

- And as much as the Cronbach's alpha coefficient is closer to 1, the greater reliability of the questionnaire will be. It is worth noting that values above 0.7 have been accepted and values less than 0.6 are undesirable (Cronbach, 1951). Initially, the variance of the scores of the questionnaire (or tests) and the total variance should be measured to calculate the Cronbach's alpha coefficient. Then, the amount of alpha coefficient is calculated using the following formula. In this study, the reliability coefficient of organizational agility capabilities questionnaire and agility stimuli questionnaire based on the above formula was (91%) and (95%), respectively.

Research Hypotheses:**The Main Hypothesis:**

* There is a significant relationship between organizational agility stimuli and organizational agility capabilities in the mining industry.

Sub-Assumptions:

- There is a meaningful relationship between the dimensions of organizational agility stimuli (need for agility, strategic design and agility strategy) and organizational agility capabilities.

- There is a meaningful relationship between dimensions of organizational agility capabilities (Integrity, Competency, Team Building, Change, Technology, Quality, Participation, Market, Training, welfare and happiness) and organizational agility stimuli.

Research Results:**A) Organizational Agility Stimuli Questionnaire**

The organizational agility stimuli variables have three dimensions, each dimension being considered as a hidden variable, and each of these hidden variables is measured by questions specific to the same dimensions. These questions, as an obvious variable, measure each dimension relevant to them. Based on Table 7, each question shows a strong and meaningful factor load on its relevant variable based on which we can understand whether the question correctly measures the same variable. Also, the path coefficients are strong and meaningful between three dimensions (need for agility, strategic design, agility strategy), that shows all three dimensions are designed to measure a variable, named organizational agility capability. In the following, the indexes are reported related to the model and the domain conventionally specified for them.

The confirmatory factor analysis model is approved related to the organizational agility variable and the determined dimensions are acceptable for the variable of organizational agility stimuli including triple dimensions.

Table 3 Standard and non-standard estimation of critical ratio and significance level of parameters presented in the model

Parameter	Estimate		Critical ratio CR	Significance level p-value
	Us	s		
Need for agility ↔ agility design	0.912		31.383	0.001
Need for agility ↔ agility strategy	0.804		20.488	0.001
agility design ↔ agility strategy	0.877		29.700	0.001
Need for agility → question 1	0.724	0.742	13.681	0.001
Need for agility → question 2	0.666	0.736	12.115	0.001

Need for agility → question 3	0.612	0.498	13.681	0.001
Need for agility → question 4	0.809	0.632	10.893	0.001
Need for agility → question 5	0.634	0.629	13.166	0.001
agility design → question 6	0.743	0.646	11.384	0.001
agility design → question 7	0.788	0.627	13.487	0.001
agility design → question 8	0.774	0.731	14.310	0.001
agility design → question 9	0.723	0.618	13.542	0.001
agility design → question 10	0.703	0.643	13.174	0.001
agility design → question 11	0.800	0.686	15.610	0.001
agility design → question 12	0.674	0.605	12.390	0.001
agility strategy → question 13	0.801	0.835	15.329	0.001
agility strategy → question 14	0.463	0.454	7.820	0.001
agility strategy → question 15	0.607	0.613	10.585	0.001

B) *Organizational Agility Capabilities Questionnaire*

This questionnaire has 10 dimensions, with each dimension being considered as a hidden variable, and each of these hidden variables is measured by questions specific to the same dimensions. In fact, these questions are considered as an obvious variable that measures its relevant dimension.

Based on Table 3, each question shows a strong and significant factor load on its own variable, based on which it can be understood that whether the question correctly measures the same variable or not. Also, the path coefficients are strong and meaningful between 10 dimensions (integrity, competency, Team building, technology, quality, change, participation, market, training, welfare), indicating that all of the 10 dimensions designed for measuring a variable, which is the organizational agility capabilities. In the following, the indexes relevant to the model and conventionally specified domain are reported. The confirmatory factor analysis model is approved for the organizational agility capabilities variable and the determined dimensions are acceptable for the organizational agility capabilities variable including ten dimensions.

Table 4 Standard and Non-Standard Estimates of the Critical Ratio and Significance Level of the parameters provided in the model

Parameter	Estimate		Critical ratio	Significance level
	Us	s	CR	p-value
Integrity ↔ Competency	0.695		16.428	0.001
integrity ↔ team building	0.841		29.973	0.001
integrity ↔ technology	0.755		21.494	0.001
Integrity ↔ quality	0.859		32.908	0.001
integrity ↔ change	0.521		9.886	0.001
integrity ↔ participation	0.762		23.014	0.001

integrity ↔ market	0.682	16.023	0.001
integrity ↔ training	0.889	36.531	0.001
integrity ↔ welfare	0.818	28.249	0.001
Competency ↔ team building	0.868	27.677	0.001
Competency ↔ technology	0.867	18.621	0.001
Competency ↔ quality	0.755	22.579	0.001
Competency ↔ change	0.874	29.939	0.001
Competency ↔ market	0.687	18.621	0.001
Competency ↔ training	0.755	21.494	0.001
Competency ↔ welfare	0.762	23.014	0.001
Team building ↔ technology	0.695	16.428	0.001
Team building ↔ quality	0.859	32.908	0.001
Team building ↔ change	0.841	29.973	0.001
Team building ↔ participation	0.521	9.886	0.001
Team building ↔ market	0.695	16.428	0.001
Team building ↔ training	0.889	36.531	0.001
Team building ↔ welfare	0.682	16.032	0.001
technology ↔ quality	0.868	27.677	0.001
technology ↔ change	0.682	16.023	0.001
technology ↔ participation	0.758	26.310	0.001
technology ↔ market	0.641	14.351	0.001
technology ↔ training	0.755	22.579	0.001
technology ↔ welfare	0.858	26.310	0.001
Quality ↔ change	0.874	29.939	0.001
Quality ↔ participation	0.818	28.249	0.001
Quality ↔ market	0.874	29.939	0.001
Quality ↔ training	0.928	29.131	0.001
Quality ↔ welfare	0.641	14.351	0.001
change ↔ participation	0.762	014.23	0.001
change ↔ market	0.695	16.428	0.001
change ↔ training	0.755	21.494	0.001
change ↔ welfare	0.841	973.29	0.001

Continued Table 5 Standard and non-standard estimation of critical ratio and significance level of parameters presented in the model

Parameter	Estimate	Critical ratio CR	Significance level p- value
participation ↔ market	0.521	9.886	0.001
participation ↔ training	0.889	36.531	0.001
participation ↔ welfare	0.859	32.908	0.001
market ↔ training	0.858	26.310	0.001
market ↔ welfare	0.755	21.494	0.001
Training ↔ welfare	0.762	23.014	0.001
integrity ↔ question 1	0.699 0.600	0.001	0.001

integrity ↔ question 2	0.752	0.631	0.001	0.001
integrity ↔ question 3	0.731	0.670	0.001	0.001
integrity → question 4	0.793	0.714	0.001	0.001
Competency ↔ question 5	0.749	0.650	0.001	0.001
Competency ↔ question 6	0.765	0.642	0.001	0.001
Competency ↔ question 7	0.648	0.653	0.001	0.001
Competency ↔ question 8	0.515	0.433	0.001	0.001
Team building ↔ question 9	0.477	0.440	0.001	0.001
Team building ↔ question 10	0.663	0.540	12.382	0.001
Team building ↔ question 11	0.623	0.546	11.432	0.001
Team building ↔ question 12	0.673	0.555	12.626	0.001
Team building ↔ question 13	0.714	0.660	13.677	0.001
Technology ↔ question 14	0.855	0.731	17.800	0.001
Technology ↔ question 15	0.726	0.649	13.976	0.001
Technology ↔ question 16	0.732	0.754	13.771	0.001
Technology ↔ question 17	0.478	0.487	8.078	0.001
Technology ↔ question 18	0.770	0.655	14.807	0.001
Quality ↔ question 19	0.786	0.700	15.216	0.001
Quality ↔ question 20	0.468	0.363	8.137	0.001
Quality ↔ question 21	0.636	0.545	11.456	0.001
Quality ↔ question 22	0.230	0.212	3.825	0.001
Change ↔ question 23	0.688	560	12.694	0.001
Change ↔ question 24	0.851	0.738	17.112	0.001
Change ↔ question 25	0.784	0.764	17.383	0.001
Change ↔ question 26	0.747	0.690	14.347	0.001
Change ↔ question 27	0.648	0.585	11.771	0.001
Participation ↔ question 28	0.769	0.720	14.909	0.001
Participation ↔ question 29	0.808	0.785	16.431	0.001
Participation ↔ question 30	0.833	0.811	17.218	0.001
Participation ↔ question 31	0.659	0.622	12.500	0.001
Market ↔ question 32	0.785	0.791	15.756	0.001

Continued Table 6 Standard and non-standard estimation of critical ratio and significance level of parameters presented in the model

Parameter	Estimate		Critical ratio CR	Significance level p-value
Market ↔ question 33	0.543	0.519	9.776	0.001
Training ↔ question 34	0.587	0.514	10.647	0.001
Training ↔ question 35	0.735	0.678	14.112	0.001
Training → question 36	0.678	0.578	12.638	0.001
Training ↔ question 37	0.767	0.681	14.993	0.001
Training ↔ question 38	0.788	0.633	15.495	0.001
Welfare ↔ question 39	0.824	0.708	16.581	0.001
Welfare ↔ question 40	0.778	0.708	15.504	0.001

Interpreting the Data Descriptive Results

The results obtained from the data indicate the minimum, maximum, mean and standard deviation of scores, organizational agility stimuli and organizational agility capabilities and its dimensions in Tables 7 to 8.

Table 7 Distribution of Minimum, Maximum, Mean, and Standard Deviation of Organizational Agility stimuli and its dimensions

Variable	Minimum	Maximum	Mean	Standard deviation
Need for agility	1.22	4.87	2.70	0.70
Strategic design	1.63	4.85	2.89	0.61
Agility strategy	1	5	2.96	0.73

For the results of the data and the Table 7, the range of scores requires the agility of each person to be between 1.22 to 4.87 and the strategic design to be between 1.63 to 4.85, and the agility strategy from 1 to 5.

Table 8 Distribution of Minimum, Maximum, Mean, and Standard Deviation of Organizational Agility capabilities and its dimensions

Variable	Minimum	Maximum	Mean	Standard deviation
Integrity	1	5	2.95	0.72
Competency	1.20	5	2.84	0.76
Team building	1.39	4.58	2.93	0.71
Technology	1.40	4.60	2.89	0.69
Quality	1.15	4.70	2.88	0.77
Change	1.20	4.85	2.83	0.70
Participation	1	5	2.95	0.72
Market	1	5	2.91	0.71
Training	1.63	4.58	2.87	0.61
Welfare and happiness	1.57	1.65	2.92	0.65

For the results of the data and the Table 8, the range of integrity scores for each person ranges between 1 and 5, and the findings indicate that competency ranges between 1.20 - 5, team building between 1.39 to 4.85, technology from 1.40 to 4.60, quality between 1.15 and 4.70, change from 1.20 to 4.85, participation between 1 - 5, market between 1 - 5, training between 1.63 – 4.58, and welfare between 1.57 to 1.65 .According to the research hypothesis, there is a meaningful relationship between organizational agility stimuli and organizational agility capabilities.

Table 9 Correlations between organizational agility stimuli and organizational agility capabilities

Variable	Organizational agility stimuli			Statistical power
	R	r ²	sig	
	0.001	0.78	0.82	

Findings of Table 9 show that the relationship between organizational agility capabilities and organizational agility stimuli exists at a significant level of 0.05. The determination coefficient of 78% of organizational agility capabilities variance predicts organizational agility stimuli that, with one unit increases in organizational agility capabilities, organizational agility stimuli increase by 0.82. Based on the hypothesis, there is a meaningful relationship between the dimensions of organizational agility stimuli (need for agility, strategic design and agility strategy) and organizational agility capabilities.

Table 10 Linear regression results for predicting organizational agility capabilities variable based on the dimensions of organizational agility stimuli

Indexes	R	r ²	β	SE _b	t	Significance
Non-standard predicted scores	0.84	0.73	0.798	0.041	22.311	0.001

The results of Table 11 show that the prediction power of curvature regression is significantly higher than linear regression (0.74-0.71 = 0.01 and p = 0.001), so the curvature regression is applicable. Table 4-34 is the only significant curvature part (sig<0.05) and estimates the linear part of the meaningful model.

Table 11 Curvature regression results for variable prediction of organizational agility capabilities based on dimensions of organizational agility stimuli

Indexes	R	r ²	Significance	β	SE _b	t	Incremental significance r ²
Non-standard predicted scores	0.82	0.74	0.001	1.211	0.063	5.179	0.001

Table 12 Prediction of organizational agility capabilities according to the dimensions of organizational agility stimuli

Indexes	R	r ²	F	Significance	B	β	SE _b	t	Statistical power
Dimensions	0.82	0.73	18.843	0.001	0.038	0.239	0.008	7.427	0.001
			25.592		0.043			6.941	
			21.913		0.035			4.590	

Findings of Table 12 show that, there is a significant relationship between organizational agility capabilities and the dimensions of organizational agility stimuli (need for agility, strategic design and agility strategy), and this fact explains 73% variance among organizational agility stimuli. If there is one

unit increases in organizational agility capabilities, the need for agility, strategic design and agility strategy will increase by 0.24, 0.20, and 0.20, respectively. Moreover, significance measurement of patterns shows significance level at 0.50.

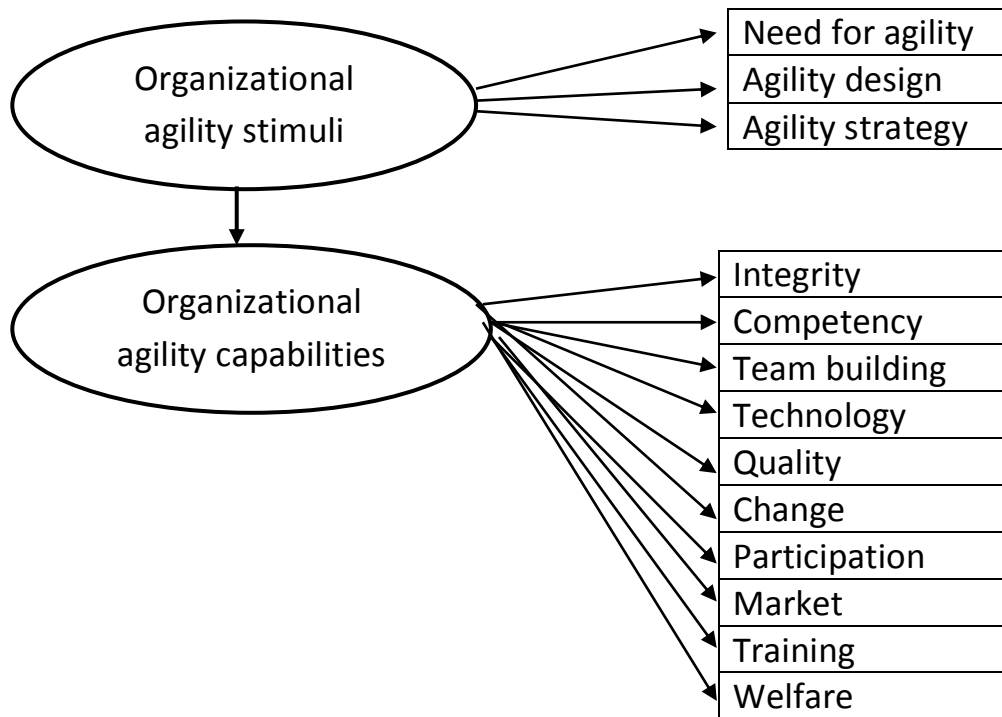


Fig. 4 Final model of the study

Discussion and Conclusion

The results of the research based on the proposed agility model show that there is a meaningful relationship between organizational agility stimuli and organizational agility capabilities. Findings in Table 7 state that there is a positive and significant relationship between organizational agility stimuli and organizational agility capabilities. Also, organizational agility capabilities predict 78% variance in organizational agility stimuli, which, by one unit increase in organizational agility stimuli, the organizational agility capabilities increase by 82%.

This pattern suggests that if the managers of the Iran's mining industry use the ideas and opinions of the members in solving the problems of the mining industry, and apply the experiences from other experts, then the gap between the senior and middle managers decreases. Consequently, this will provide the terms of dialogue and conversation between the members (the creation of a virtual organization), which will lead to continued flexibility and continuous and rapid changes at various levels. As a result, we can push forward the country's mining industry for creating mobility and organizational agility. In fact, by timely prediction and responsiveness to changes, we can manage effectively the constructive capabilities and build cultural and organizational agility, which causes successful implementation of goals for individual members and the mining industry; and responding to the needs and expectations of the beneficiaries in the mining industry; and guide the mining industry faster and easier towards the agility.

The findings are compatible in studies of Knnox and Kalan (1998), Jacobs and Kling (2007), Sobhaninejad (1385), Arabs and Najarian (1387), Hassanzadeh (1388), Shaheen Rabbani (1390) and Khorshid (1389). Kennox & Kalan (1998) found that learning and innovation respond to the needs and expectations of the beneficiaries. Shahin and Rabbani Mehr (2011), showed that if managers use personnel feedback, they can guide the organization towards agility faster and with lower costs by taking advantage of the collaborative management of the organization. Hasanzadeh (2009) found learning and knowledge in future organizations, focuses on the production of goods and services, and, more generally, on creating value added. Sobhaninejad (1385) believes that learning in organizations, make staff skillful and cultivate more capabilities in them. The more they enhance staff skills and abilities, the better estimated the needs and desires of customers. Organizations face no problem for earning excellence and organizational goals, and gain a great share in the market of products and services. Rooshanayi (1392) studied the effect of organizational agility capabilities on organizational performance improvement.

For this purpose, organizational agility capabilities, according to Sharifi and Zhang's theory, have been defined in four dimensions: speed, responsiveness, competency and flexibility. In another research Nikpour Salajeghe (2010) examined the relationship between organizational agility and job satisfaction. The findings of the research show that there is a significant relationship between organizational agility and its sub-variables, namely, responsiveness, competency, flexibility and speed in work and job satisfaction.

Khorshid (2010) states that globalization and competition involve great shocks and tremors in the global manufacturing environment; and requires creating organizations to make changes in the structure and process of business. In addition, manufacturing organizations have found that agility is imperative for survival and competitiveness. But the ability to make agile organizations is less developed than expected. Meanwhile, the managers are confronted with how much their organization is agile and how much agility it needs. His research results showed that two capabilities of agile production "training" and "competency" gained the highest and the lowest scores, respectively.

Also, we can observe a meaningful relationship based on the agility model presented between dimensions of organizational agility stimuli (need for agility, strategic design and agility strategy) and organizational agility capabilities. Findings of Table 12 have shown a positive and significant relationship between dimensions of organizational agility stimuli (Need for agility and strategic design and agility strategy) and organizational agility capabilities. The results of the research show that we can provide the conditions for necessary communication and cooperation between different sectors of the country's mining industry by creating flexibility grounds in order to increase speed and readiness for change. Readiness for rapid change and rapid market penetration is achieved by shortening the distance between directors, providing feedback and suggestions by senior and middle management and staff, testing new ideas inside or outside the institute and creating a culture of acquisition.

It is necessary to emphasize that in the mining industry, factors such as mental models and old beliefs hinder the learning and agility of the organization and readiness to change and responding quickly to needs. Therefore, knowledge transfer as a value can also serves as an agility incentive in the path of responding to organizational agility stimuli. Learning can be enhanced at the level of the mining industry. It also enabled the members and senior managers to apply their skills and knowledge in line with the mining industry interests through effective innovation and guiding creativity of members and developing their capabilities, promoting justice and equality, and encouraging and Appreciating members and obligating them. Also, by one unit increase in organizational agility capabilities, need for agility, strategic design, and agility strategy increase by 0.24, 0.20, and 0.20, respectively.

The results of the studies are consistent with the findings of Mohammad Reza Amiri (2014), Sandgol (2014), Nabatchian et al (2014) and Savari et al. (2013). Mohammad Reza Amiri (2014) believes

that environmental changes will require agile levels, and strategies should be in the same direction in making changes. Sandgol (2014) found that, responsibility, competition, flexibility and implementation rate are highly correlated with job satisfaction and organizational agility stimuli. Nabatchian et al. (2014) determined a significant relationship between organizational agility and small variables including replication, competition, flexibility, and speed at work. In the findings of Savari et al. (2013) four variables are indexes including speed, competition, responsiveness and flexibility. Flexibility and competition dimensions have desirable agility and each organization needs to plan the changes. These changes are a systematic practice for the reconstruction of the organization in a way that to be coordinate with the changing peripheral environment. Because the dynamics and development of the organization depends on these changes, and the flexibility of each of these operations is based on the goals of the organization.

Bagherzadeh et al. (2010) investigated the status of agility capabilities in public organizations. They state that change is one of the greatest characteristics of organizations and institutions in the field of competition, and since the beginning of the 21st century, organizations have experienced fundamental changes around them. These changes lead the organization to new challenges, which caused many organizations to revise their business priorities and strategic views, and emphasize on adaptability with changing business environments and responding to customer needs through new methods of collaboration and virtual organization.

The final analysis of the results shows that there is a significant relationship between organizational agility stimuli with organizational agility capabilities. Also, the fitness indices of the research model explain that finally, there is fitness between research data and conceptual model of research, and the research conceptual model is confirmed. Also, the theoretical results and literature of research indicate that there is a theoretical relationship between the variables of organizational agility stimuli and the organizational agility capabilities. The research findings point to the stronger impact of organizational agility indicators on the characteristics and dimensions of organizational agility capabilities, and the findings of the research confirm this strong relationship.

Research findings are consistent with the theoretical framework, and this suggests that the approach of competitive values in organizations for the effectiveness of organization and dynamics and agility in the competition market requires a strategic factorial approach for drawing a clear vision. Also, the trends and strategic objectives stimulate organizational agility capabilities in order to increase flexibility and readiness for rapidity against changes. In other words, identifying beneficiaries infrastructure needs and improving services by shortening the gap between senior and middle managers, increase wide supervision in participatory decision-making; Information and communication technology is used to improve the administrative relationship and the availability of information to staff; meanwhile encouraging the staff to move towards more effective communication channels and team building, and this leads to creation of a learning organization, and attention is paid to the training and improvement of staff with multi-skills and the establishment of a management system for evaluating the performance of employees and organizations.

As mentioned above, organizational agility stimuli are stronger than other components; as a result, agility stimuli pave the way for moving toward agility and improvement of agility level. So, they can respond to the needs and demands of the organization with better speed and quality.

The results of the final model of the research is supported and endorsed by the agility model of Sharp et al. (1999), Lee Jinhay et al., Kroketiv and Yusuf model (2003), Jafarnezhad and Shahabi (2010), Fathian et al. Model (2005), Wayne Bai and Worley (2014), khorshid model (2010) and Marzieh Heidari et al. model (2014). Sharp et al. (1999) recognize 10 empowerment factors for agile production: virtual enterprise, e-commerce, fast growth organizational structure, personnel empowerment, continuous

improvement, multi-skilled and flexible staff, teamwork, simultaneous engineering, risk change management and integrated information systems. Lei Jin hay et al. ascribe the real agile production process to strategic process, integrity, key competency, information technology, and multiple beneficiaries.

Based on the Krokative and Yousuf model (2003), managers in order to create agility in organizations, in addition to agility in market and environment knowledge, should be able to create agility goals and missions through organizational rewards to anticipate and accept change and adapt quickly with them. According to Jafarinejad and Shahae (2006), who applied a comprehensive approach in their organizational agility research, it became clear that after the failure of manual production responsiveness to meet the growing demand of customers, organizations were forced to continue the massive production process; and the concepts such as close relationship with the customer, the integrity of the organizational internal resources and integrity with other organizational recourses became very important.

Fathihaan et al. (2006) stated that the origins of the concept of agility is the same agile production that can be considered as the integration of the organization, the existence of individuals with a high level of knowledge and skill and advanced technologies for innovation and collaboration in order to respond to customer needs. Thus, it's necessary for the companies or organizations to take appropriate measures for agility in organizational structure, staffing, or human resources, technology, innovation and creativity. Wayne Bai and Worley (2014), on the other hand, suggested that organizations improve skills, knowledge, organizational and architectural systems, and apply existing strategies; and have the ability to design and support new potential capabilities.

Gonaskaran (1999) considers four basic elements for agile production as: strategy, technology, systems, and manpower. But, according to Hormosy (2001), for successful and optimal agility production, it is necessary to consider the fundamental changes in five axes: governmental rules and regulations, job cooperation and partnerships, information technology, reengineering processes and staff flexibility, as well as paying attention to the skills and creativity of the organization's beneficiaries; and the correct application of the technologies will increase the flexibility and responsiveness of the organization. In this situation, the organization can achieve agility, by establishing effective communication with suppliers, meeting on time needs and wishes of the employees.

Also, based on Torng Lin et al. the agile organizations are organized in such a way that to cope with unpredictable changes and evolutions, and they must work together to quickly deliver products to the market. Finally, based on the model of Marzieh Heidari et al. (2014), the updating approach, the short distance between senior and middle managers and the approach for strategic factors in the organization play an important role in increasing the agility capabilities of organizations; If, at the time of communicating with suppliers, we consider their traits or characteristics of their abilities and their capacity to work, organizations can move towards agility. Also, if organizations have mutual connection with each other, they can properly and efficiently use the capabilities and resources of each other. So, with quick and powerful decision making we can affect on the reaction speed against the changes, which is one of the most important characteristics of agile organization. By emphasizing on continuous learning, the better we can prepare the staff to accept new ideas and select new functions.

References

Amiri, Mohammad Reza. (2014). Presentation of an Organizational Agility Assessment and Management Model by Using Fuzzy Approach, Master's Thesis for Industrial Engineering, System Management and Productivity, Islamic Azad University, Qazvin Science Research Center.

- Bagherzadeh, Mohammad Reza, Baloei Jamkhaneh, Ezatollah and Moafi Madani, Seyyed Reza. (2010). Investigating the Status of Agility Capabilities in public Organizations (Case Study: Mazandaran Post Office) Researcher (Management), 7(18): 47-17.
- Crocitto, M., & Youssef, M. (2003). Human side of organizational agility. *Industrial Management & Data System*, 103(6): 388-397.
- Dove, R. (1994). The meaning of life and the meaning of agile. *Production*, 106(11): 14-15.
- Dove, R. (1999). Knowledge management, response ability, and the agile enterprise. *Journal of knowledge management*, 3(1): 18-35.
- Dove, R., Hartman, S., & Benson, S. (1996). An agile enterprise reference model with a case study of Remmele engineering. In *Agility Forum: Report* available online.
- Fathiyan, Mohammad and Salehi Moghadam, Azam. (2005). The Role of Information Technology in Agility of Small and Medium Enterprises in Iran, *Third International Management Conference*, Tehran.
- Goldman, S. L. (1995). *Agile competitors and virtual organizations: strategies for enriching the customer*. Van Nostrand Reinhold Company.
- Goldman, S. L., & Nagel, R. N. (1993). Management, technology and agility: the emergence of a new era in manufacturing. *International Journal of Technology Management*, 8(1-2): 18-38.
- Gunasekaran, A. (1999). Agile manufacturing: a framework for research and development. *International journal of production economics*, 62(1): 87-105.
- Gunasekaran, A., McGaughey, R., & Wolstencroft, V. (2001). *Agile Manufacturing: Concepts and Frameworks*. *Agile Manufacturing: The*, 21: 25-49.
- Heydari, Marzieh, Siyadat, Seyed Ali, Hoveyda, Reza and Shahin, Arash. (2014). The Relationship between Organizational Excellence Empowerment and Organizational Agility Capabilities in State Universities of Isfahan, *Journal of Research in New Approaches in Educational Management*, Islamic Azad University, Marvdasht unit.
- Heydari, Marzieh, Siyadat, Seyed Ali and Hoveyda, Reza. (2014). Investigating the multiple Relationships between Organizational Learning, Organizational Excellence and Organizational Agility Capabilities in State Universities of Isfahan, *Modern Educational Approaches*, Faculty of Educational and Psychological Sciences, University of Isfahan, Isfahan.
- Hormozi, A. M. (2001). Agile manufacturing: the next logical step. *Benchmarking: An International Journal*, 8(2): 132-143.
- Iacocca, L. (1991). *21st century manufacturing enterprise strategy*. In *Technical Report*. Lehigh Univ Bethlehem, PA.
- Jackson, M., Johansson, C. (2003). An agility analysis from a production system perspective. *Manufacturing systems*, 14 (06): 482-488.
- Jafar Nejad, Ahmad and Shahai, Behnam. (2007). *Organizational agility and agile production*, Mehrban nashr Book Institute.
- Jafarnejad, Ahmad. (2006). *Production Management and novel operation*, Tehran University Press, First Edition.
- Jin-Hai, L., Anderson, A. R., & Harrison, R. T. (2003). The evolution of agile manufacturing. *Business Process Management Journal*, 9(2): 170-189.
- Khorshid, Sedigheh. (2010). A Hierarchical Model Based on Fuzzy Rhythmic Method for Assessing and Measuring Productivity Agility, *Industrial Management Studies*, 8 (18): 69-41.
- Kid, P. T. (1994). *A 21st Century Paradigm in Agile Manufacturing: Forging New Frontiers*, Addison, Wesley, Wokingham.
- Kidd, P. (2000). Two definitions of agility. Available at Website address: www.CheshireHenbury.Com.
- Lin, C.T., Hero, C., Yi-Hong, T. (2005). Agility evaluation using fuzzy logic, 101(2): 335-368.
- Maskell, B. (2001). The age of agile manufacturing. *Supply Chain Management: An International Journal*, 6(1): 5-11.
- Nikpour Sanjar Salajegh, Amin. (2010). The Relationship between Organizational Agility and Job Satisfaction among Employees of public Organizations in Kerman, *Management Researches*, 7: 184-169.

- Roshanaie, javad. (2013). The Effect of Organizational Agility on Organizational Performance in Tabriz Tractor Company, Master's Degree in Public Administration, Tehran University, Aras Pardis.
- Sanadgol, Marzie. (2014). The Survey of Relationship between Organizational Agility and Principals Job Satisfaction, *International Journal of Sciences & Applied Research* 3: 317-319.
- Savari, F., Mehdipour, A., Azmsha, T. (2013). Assessment aspects of organizational agility (case study of: Khuzestan Sport and Youth organization), *International Journal of Sport Studies*, 3(6): 643-648.
- Sharp, J., Irani, Z., Desai, S. (1999) Working towards agile manufacturing in the UK industry, *International Journal of Production Economics* 62: 155-169.
- Tavakoli Roody, Amir. (2012). Economic and Political Impact - Security of Employer Mineral Activities in Sangan, Imidro, Iron Ore Sangan center, Taybad Azad University.
- The Role of Oromo Indigenous Knowledge in Disaster Management and Youssuf, Y., Sarhadi., Gunasekaran, A. (1999). Agile Manufacturing: The drivers, concepts and attributes, *International Journal of Production Economics* 62: 33-43.
- Van Hoek, R., Harrison, A., Christopher, M. (2001). Measuring agile capabilities in the supply chain, *International Journal of Operations & Production Management* 21: 126-147.
- Winby, S., Worley, C.G. (2014). Management processes for agility, speed, and innovation, *Organizational Dynamics*, 43: 225–234.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).