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RESEARCH PAPER

Study the effect of certain agility capabilities on organizational agility at staff offices of the national Iranian South oil company (Nisoc)

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Abstract

Nowadays, many organizations consider organizational agility crucial for survival and ongoing competition, because it empowers any organization to develop a series of distinct capabilities so as to rapidly and constantly respond to changes and take advantage of new opportunities. This study mainly intends to examine the effect of certain agility capabilities on organizational agility. The statistical population comprises a total of 455 employees working at staff offices of the National Iranian South Oil Company (NISOC), among which 206 individuals were selected as sample based on the Morgan's Table through simple random sampling. For data collection, two standard questionnaires were employed. In order to analyze the data, SPSS and LISREL were employed. The results of structural equations modeling suggested that the agility capabilities (i.e. competency, flexibility, responsiveness, promptitude and technology) leave a significantly positive effect on organizational agility. Finally in this regard, several recommendations were made concerning the results.

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Introduction

Today's world involves constant evolution and instabilities, leaving a profound impact on organization. Hence, it is essential that any organization adapt, either directly or indirectly, with threatening changes so as to maintain survival. In competitive markets, there is an urgent need for improvement of flexibility as well as corporate responsiveness. Many organizations are facing an increasingly sustainable and uncertain competition intensified by means of technological innovations, market environment shifts and ever-changing customer needs. Such crisis has led to substantial reforms in organizational leadership perspectives, business priorities and reconsideration of traditional patterns and even relatively modern ones (Kermani, 2008).

Nowadays, many companies strive not to fall behind through utilizing modern practices and instruments such as automated flexible manufacturing systems, total quality management, business process reeng-ineering, benchmarking, outsourcing and many other methods and tools, systems production, new produ-ction methods, altogether referring to a recent concept called agility (Vazquez *et al.*, 2007). Agile manufacturing is a new model resulted from changes occurring in the corporate environment (Pouya and Khubian, 2014).

The manufacturing industry has continuously been facing a paradigm shift. This shift has been transitioning from handicraft industry into mass production and then into pure production and agile manufacturing in the current era (Hormozi, 2001, Burgess, 1994).

Nowadays, many organizations consider organizational agility crucial for survival and ongoing competition because it empowers any organization to develop a series of distinct capabilities so as to rapidly and constantly respond to changes and take advantage of new opportunities (Voirin, 2011).

This shift has been transitioning from handicraft industry into mass production and then into pure production and agile manufacturing in the current era

(Hormozi, 2001, Burgess, 1994). According to Worely & Lawler (2010), agility is the capability to design a dynamic organization which can identify the need for changes made in internal and external resources, makes changes continuously and maintains higher than average performance.

In the current environment, agility refers to efficient response to an unpredictably evolving space to be taken advantage of as opportunities for organizational progress (Jafarnejad and Shahayee, 2007). According to Sharifi & Zhang agility refers to the capability of any organization in perceiving and foreseeing the existing changes in the business environment.

From the late 1980s to the mid-1990s, in the wake of widespread political and economic developments around the world, a great deal of efforts and measures were taken to understand the roots and factors contributing to new systems of global business.

Any agile-designed organization has a unique orga-nizational structure leading to more efficient processes. With regard to the importance of organizational agility in the public sector and several factors such as organizational structure contributing to organiza-tional agility, this study seemingly can help develop an efficient organizational structure at staff offices of the National Iranian South Oil Company (NISOC), thus setting groundwork for promoting agility capabilities (i.e. competency, flexibility, responsive-eeness, promptitude and technology).

Agile organizations require advanced information and communication systems which can both ensure smooth data flow concerning the existing issues and remain adaptable with the ever-changing circumstances (Urei Yazdani *et al.* 2010). One of the most important and inevitable parameters for achieving agility involves technology. Kid considers the foundations of agility as organization, individuals and technology (Kid, 1994).

The aim of this paper is studying the effect of certain agility capabilities on organizational agility at staff

ofices of the National Iranian South Oil Company (NISOC).

Materials and methods

Research method

This is an applied study in terms of objective and causal-descriptive in terms of method. For data collection, two desk and field procedures were employed. The data collection instruments constituted a questionnaire. The statistical population comprised the employees working at the staff offices of the National Iranian South Oil Company (NISOC). They included a total of 455 individuals, among which 206 were selected through Morgan's Table as simple random sampling.

Research objectives

General objective: Evaluating the effect of certain agility capabilities on organizational agility at staff offices in the National Iranian South Oil Company (NISOC).

Evaluating the effect of competency on organizational agility at staff offices in the National Iranian South Oil Company (NISOC).Evaluating the effect of flexibility on organizational agility at staff offices in the National Iranian South Oil Company (NISOC). Evaluating the effect of responsiveness on organizational agility at staff offices in the National Iranian South Oil Company (NISOC). Evaluating the effect of promptitude on organizational agility at staff offices in the National Iranian South Oil Company (NISOC). Evaluating the effect of technology on organizational agility at staff offices in the National Iranian South Oil Company (NISOC). Main hypothesis: Evaluating the effect of certain agility capabilities on organizational agility at staff offices in the National Iranian South Oil Company (NISOC).

Sub-hypotheses

Competency significantly affects organizational agility at staff offices in the National Iranian South Oil Company (NISOC). Flexibility significantly affects organizational agility at staff offices in the National Iranian South Oil Company (NISOC). Responsiveness significantly affects organizational agility at staff offices in the National Iranian South Oil Company (NISOC). Promptitude significantly affects organizational agility at staff offices in the National Iranian South Oil Company (NISOC). Technology significantly affects organizational agility at staff offices in the National Iranian South Oil Company (NISOC).

Data analysis

The data were analyzed at two descriptive and inferential. Firstly, the descriptive statistics were employed to evaluate the general questionnaire items (i.e. sample demographic characteristics). Secondly, the Pearson's correlation test as inferential statistics was employed to examine the relationship between the variables. Moreover, the Confirmatory Factor Analysis was used to identify the latent variables. All the analysis was done through SPSS and LISREL.

Validity and reliability

In order to evaluate the questionnaire validity, the Cronbach's alpha was employed. A total of 30 questionnaire sheets were handed out, the final value of Cronbach's (α) alpha was obtained at 81% which indicates the questionnaire was adequately valid. The alpha coefficients of the research questionnaire can be seen in Table 1.

Table 1. The alpha coefficients of the research questionnaire.

Variable	Cronbach's alpha
Responsiveness	0.72
Competency	0.71
Flexibility	0.86
Promptitude	0.78
Technology	0.80
Organizational agility	0.88
Total questionnaire	0.81

Furthermore, the questionnaire reliability was confirmed based on the results from certain prestigious academic studies as well as university professor comments.

Results and discussions

Key agility capabilities in an organization

Currently, the predominant idea regards any organization as an identity which not only reacts to the external environment but defines its environment in an efficiently active manner. This paradigm is proposed as a prosperity capability in a changing, unstable and unpredictable environment as organizational agility. Only those organizations can keep on survival in competition markets that have managed to attain such capabilities (Goldman *et al.* ᾿ 1995). Agile organizations require advanced information and communication systems which can both ensure smooth data flow concerning the existing issues and remain adaptable with the ever-changing circumstances (Urei Yazdani *et al.* 2010). One of the most important and inevitable parameters for achieving agility involves technology. Kid considers the foundations of agility as organization, individuals and technology (Kid, 1994). In addition to positive penetration in organizational performance, Informa-tion Technology affects corporate performance and provides a mechanism for efficient storage, access and allocation. The application of IT in an organization leads to utilization of value chain flexibility as a result of agility and ultimately higher competitive advantage. The agility of an organization is a function of IT integration (Swafford *et al.* 2008).

Agile institutions and organizations are worried about change, uncertainty and unpredictability of their business environment. They require a number of distinct capabilities in order to tackle change, uncertainty and unpredictability of their business environment (Rajabzadeh and Shahayee, 2005). These capabilities cover four key elements counted as the basis for agility (*Fig.* 1):

1- Responsiveness referring to the capability of detecting changes and rapid reaction and taking advantage.

2- Competency implying the capability to set organizational goals and objectives.

3- Flexibility and adaptability consisting of streamlining various processes and goals using identical facilities.

4- Speed Or Quickness referring to the capability of doing activities in the shortest time possible (Jafarnejad and Shahayee, 2007).

5- Technology which combines a series of exclusive knowledge, organizations, practices, machinery, tools and human skills so as yield desirable products for society (Rouhani, 2013).
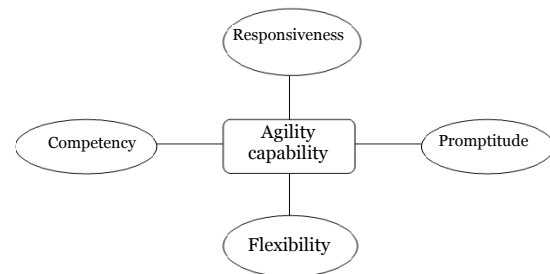
Fig. 1. Key agility capabilities in an organization (Rajabzadeh and Shahayee, 2005).

In this section, the statistical analysis was employed to describe the data, while the most common central and dispersion measures were used to observe how the statistical sample is distributed in terms of variables such as gender, education level and work experience of employees at the staff offices of the National Iranian South Oil Company (NISOC) based in Ahwaz.

Gender of respondents

As can be seen in Table 2, 81% of respondents were male, while 19% were female.

Table 2. Frequency distribution of the respondents.

Gender	Frequency	Percentage	Cumulative percentage
Male	166	80.6	80.6
Female	40	19.4	100
Total	206	100	---

Education level of respondents

As can be seen in Table 3, about 48% have bachelor's degree, about 41% have master's, and about 10% have PhDs.

Table 3. Frequency distribution for education level of respondents.

Education level	Frequency	Percentage	Cumulative percentage
Bachelor's	100	48.5	48.5
Master's	85	41.3	89.8
PhD	21	10.2	100
Total	206	100	---

Work experience of the respondents

As shown in Table 4, 14% of respondents have 5 years of work experience and less, about 15% of respondents have between 6 and 10 years of experience, 15% have work experience for 11 to 15 years, 11% between 16 and 20 years of experience, and finally, about 47% of them have 21 to 30 years of work experience.

Table 4. Frequency distribution of respondents work experience.

Work experience	Frequency	Percentage	Cumulative percentage
5 years and less	29	14.1	14.1
6-10 years	30	14.6	28.6
11-15 years	30	14.6	43.2
16-20 years	22	10.7	53.9
21-30 years	95	46.1	100
Total	206	100	---

Results of pearson's correlation test

The results obtained from the Pearson's correlation test on research variables processed through SPSS have been illustrated in Table 5. The correlation between each pair of variables has been displayed in this table 5.

Table 5. The Pearson's correlation coefficients for the research variables and their corresponding dimensions.

		Responsiveness	Competency	Flexibility	Promptitude	Technology	Capability	Agility
Responsiveness	Pearson Correlation	1	.765**	.676**	.486**	.555**	.834**	.655**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	206	206	206	206	206	206	206
Competency	Pearson Correlation	.765**	1	.725**	.593**	.602**	.874**	.695**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	206	206	206	206	206	206	206
Flexibility	Pearson Correlation	.676**	.725**	1	.637**	.621**	.877**	.686**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	206	206	.686**	206	206	206	206
Promptitude	Pearson Correlation	.486**	.593**	.676**	1	.562**	.792**	.654**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	.655**	206	206	206	206	206	206
Technology	Pearson Correlation	1	.602**	.725**	.562**	1	.799**	.755**
	Sig. (2-tailed)		.000	.000	.000		.000	.000
	N	206	206	206	206	206	206	206
Agility capability	Pearson Correlation	.765**	.874**	1	.792**	.799**	1	.825**
	Sig. (2-tailed)	.000	.000		.000	.000		.000
	N	206	206	.676**	206	206	206	206
Agility	Pearson Correlation	.676**	.695**	.000	.654**	.755**	.825**	1
	Sig. (2-tailed)	.000	.000	206	.000	.000	.000	
	N	206	206	.725**	206	206	206	206

**. Correlation is significant at the 0.01 level (2-tailed).

Confirmatory factor analysis of measurement models

Prior to stepping into the stage of hypothesis testing, it was necessary to ensure the validity of measurement models for the research variables. Hence, the double-construct measurement models entailing agility capabilities and organizational agility are presented separately in the following. In this research, the confirmatory factor analysis was conducted through path analysis regarding the identified factors. This analysis was done by several structural equations model using Lisrel.

● *Confirmatory factor analysis of the measurement model for agility capabilities*

In this section, the results obtained from implement-tation of measurement models, agility capabilities and confirmatory factor analysis for this variable, are presented through the path analysis technique and structural equations model assisted by Lisrel.

The fitting indicator values for the model have been illustrated in Table 6 below:

Table 6. The fitting indicators for the measurement model, i.e. agility capabilities.

Fitting indicator	χ^2/df	NNFI	NFI	CFI	AGFI	GFI	RMSEA
Reported value	1.23	0.99	0.97	0.99	0.87	0.87	0.034

The values indicate that the model is adequately fitting. In other words, the research conceptual model is to a great extent consistent with the perceived data.

● *Confirmatory factor analysis of the measurement model for organizational agility*

The results of implementing the organizational agility model suggested that both the research conceptual model and the confirmatory factor analysis of the measurement model were adequately fitting. The fitting indicator values for the model have been illustrated in Table 7 below:

Table 7. The fitting indicators for the measurement model, i.e. organizational agility.

Fitting indicator	χ^2/df	NNFI	NFI	CFI	AGFI	GFI	RMSEA
Reported value	1.23	1	0.97	1	0.87	0.90	0.011

AS can be seen, the model indicators point to the mode's adequate fitting. In other words, the research conceptual model is to a great extent consistent with the perceived data.

Hypotheses testing

Having conducted the confirmatory factor analysis and identification of the latent variables, this section focuses on the research hypothesis testing. For that purpose, a structural equations models and Lisrel were employed.

Main hypothesis testing

In implementation of the structural equations model for testing the main research hypothesis, the Lisrel outputs in Table 8 were indicative of the adequate fitting of the structural equations model.

Table 8. The fitting indicators for the measurement model, i.e. main hypothesis.

Fitting indicator	χ^2/df	NNFI	NFI	CFI	AGFI	GFI	RMSEA
Reported value	1.58	0.97	0.95	0.97	0.78	0.81	0.53

Chi-Square=595.67, df=376, P-value=0.00000, RMSEA=0.053
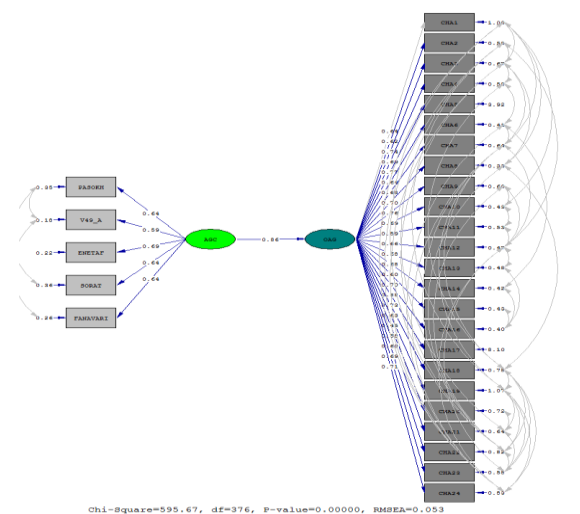
Fig. 1. Research structural model at standard estima-tion mode.

Similarly in Graph 2, the significance levels and other parameter obtained from the structural model have been displayed. The entire coefficients proved to be significant, because the t-value of each one was higher than 1.96 and lower than 1.96.
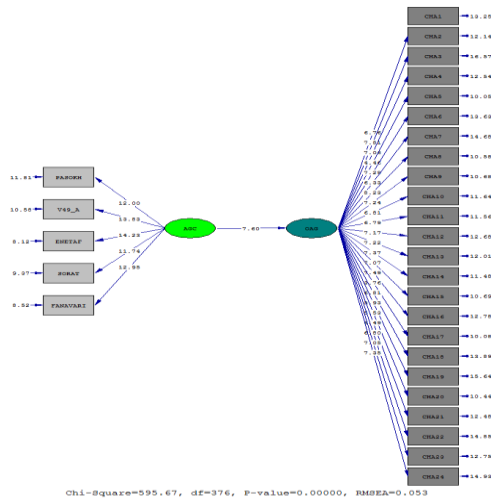
Fig. 2. The significant levels for the research structural model.

The results of structural equations model revealed that the agility capabilities positive affect the organizational agility (β=0.86; t=7.60). Therefore, the main hypothesis is proved.

Sub-hypotheses testing
In implementation of the structural equations model for testing the research sub-hypothesis, the Lisrel outputs in Table 9 were indicative of the adequate fitting of the structural equations model.

Table 9. The fitting indicators for the measurement model, i.e. agility capabilities.

Fitting indicator	χ^2/df	NNFI	NFI	CFI	AGFI	GFI	RMSEA
Reported value	1.30	0.98	0.96	0.99	0.75	0.77	0.039

Similarly in Graph 4, the significance levels and other parameter obtained from the structural model have been displayed. The entire coefficients proved to be significant, because the t-value of each one was higher than 1.96 and lower than 1.96.
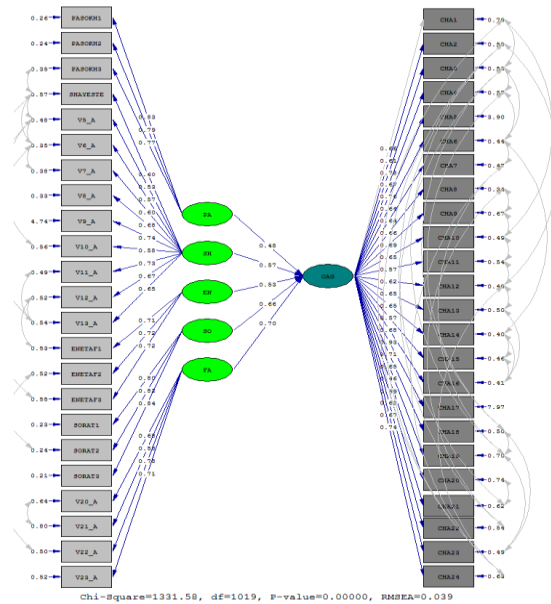
Fig. 3. Research structural model at standard estimation mode.
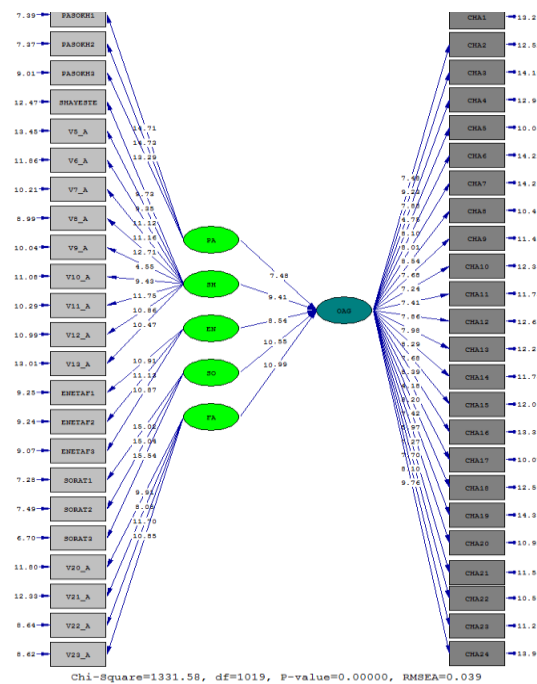
Fig. 4. The significant levels for the research structural model.

The results of structural equations model revealed that components of agility capabilities including responsiveness, competency, flexibility, promptitude and technology positively and significantly affect the organizational agility.

Conclusions

Table 10. The results of hypothesis testing based on the structural equations model.

Hypotheses	β	t-value	Result
Agility capabilities-Organizational agility	0.86	7.60	Proved
Responsiveness-Organizational agility	0.48	7.48	Proved
Competency-Organizational agility	0.57	9.41	Proved
Flexibility-Organizational agility	0.52	8.54	Proved
Promptitude-Organizational agility	0.66	10.55	Proved
Technology-Organizational agility	0.70	10.99	Proved

This study intended to examine the effect of agility capabilities on organizational agility at staff offices in the National Iranian South Oil Company (NISOC). With regard to the results obtained from path analysis, the agility capabilities leave a significantly positive effect on organizational agility. Such results are consistent with prior research such as that conducted by Javanmardi *et al.* (2011). An additional finding of this study is that competency, flexibility, promptitude, responsiveness and technology posi-tively affect organizational agility at staff offices in the National Iranian South Oil Company (NISOC). These results are also consistent with those obtained by Zanjirchi and Olofat (2010), Ebrahimpour *et al.* (2012). Given that obtained results, it can be argued that improvement of organizational agility in staff offices of the National Iranian South Oil Company (NISOC) can be realized through R&D concentrating on agility capabilities, i.e. competency, flexibility, promptitude, responsiveness and technology.

Considering the results, there are a number of suggestions made in this study as follow

1. Hiring knowledge-oriented, competent and skillful employees leads to operational efficiency (integrity) external and internal cooperation, which in turn brings about better competency and agility in the organization. Therefore, it is recommended that educational courses be held so as to raise employee knowledge, efficiency and capability.

2. Planning aimed at promptitude in delivery of products to the market and rapid execution of tasks aligned with corporate agility.

3. Designing an appropriate mechanism for rapid response to changes immediately after occurrence so as to improve the organizational responsiveness.

4. Flexibility: It is recommended that flexibility be exercises in the volume of products as well as the production configuration, which in turn leads to improvement of organizational flexibility.

5. Furthermore, it is advised to make various digital choices, i.e. technology capabilities, such as the Intranet, databases, knowledge reservoirs, advanced knowledge technologies, real-time conference systems, collaboration-based tools for sharing the planning knowledge of organizational resources, customer relations management, Analytical decision and follow-up support technology, which brings about organizational flexibility and improved organizational agility.

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