

# Relationship between Workforce Agility and Organizational Intelligence (Case Study: The Companies of "Iran High Council of Informatics")

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## Abstract

The aim of this study is to explore the relationship between "workforce agility" and "organizational intelligence" (considering the components of both concepts and contextual variables, too).

The population included the managers and employees working at the grade one companies of "Iran High Council of Informatics".

Results showed a significant positive correlation between workforce agility and organizational intelligence. All components of organizational intelligence (except strategic vision), had a positive significant relationship with workforce agility. The relationship between the individual components of workforce agility (except interpersonal adaptability) and organizational intelligence is positive and significant. Variables of Age, work experience, and organizational position, had a positive significant relationship with the agility of the workforce, while about sex and educational level, no significant relationship was found.

It is recommended simple and operational translation of mission statement and strategies for employees, establishing of feedback system, enhancing of employees work-life quality and participation, facilitating learning, managerial skills training, putting employees in decision-making situation, taking advantage of the cultural diversity, be considered. Moreover employment of professionals (regardless of gender, or merely emphasis on educational degree) must be considered.

**Keywords:** organizational intelligence, workforce agility, strategic vision

## 1. Introduction

New Product Development companies make their business by continuously introducing new, innovative products. In the current global, turbulent market environments these companies face many source of uncertainty (Kettunen & Laanti, 2008). In this research, our focus was on the ICT companies. ICT has been faced with dual challenges of the rise and collapse of industry boundaries. Characteristic of this industry is fast change and also complex systemic interactions (Doz & Kosonen, 2008).

It's clear that in a rapidly changing world only intelligent organizations survive; and the efficiency of organization is proportional with the usage of their fulfillment depends on their intelligence requirement (Ercetin, Potas, & Hameddoglo, 2012). Organizational intelligence (OI) is a multidimensional and multifaceted concept involving the recursive interplay of cognitive, behavioral and emotional capabilities of organizations (Akgun, Byrne, & Keskin, 2007) to shape and change the environment and to adapt to its environment (Akgun et al., 2007). Thus, Organizational intelligence is not separate from the people who compose it and live in it (Akgun et al., 2007). In intelligent organization employees put their heads together to milk opportunities, co-create products and services, find and solve problems (Pinchot & Gifford, 1996).

Nowadays many new product development software projects employ agile methodologies (Kettunen & Laanti, 2008). Successful and effective integration of new technology requires the workforce to adapt to changes in their workplace at a much faster pace than in the past (Harvey, Koubek, & Chin, 1999). Furthermore, Yaghoubi and Dahmardeh (2010) argued workforce as a content enabler of organizational agility. Workforce agility (WFA) is

commonly described as a strategy that facilitates profitability in rapidly changing, and uncertain production environments. It is widely believed that workforce agility may provide wide range of benefits such as quality improvement, better customer service, learning-curve acceleration, economy of scope and depth (Sherehiy, Karwowsky, & Layer, 2007).

There are a few studies investigating WFA and moreover, most of these researches have focused on the attributes of the agile workforce and not the factors influencing WFA or the factors influenced by it. So, considering common aspect of WFA and OI, i.e., the ability to recognize environmental opportunities and threats, and to response to them, we supposed that cognitive, emotional and behavioral aspects of OI could facilitate agile behavior and on the other hand, WFA could enhance level of OI. Because so far no research study investigates the relationship between these two variables, we consider these variables both “predictor variable” and “dependent variable”. In addition, there’s no research investigating relation of demographic variables and WFA. We hope the research findings would help better understanding of the relation between OI (as an organizational level of environment assessment, and responsiveness) and WFA (as an individual level of adaptability) and accordingly, improving both of them.

The aim of this study is to explore the relationship between workforce agility and organizational intelligence (considering the components of both concepts) and also explanation of the relationship between contextual (demographic) variables and workforce agility. We established this research according to two subjective backgrounds: 1) a conceptual similarity between OI and managerial actions for making employees agile, and 2) the possibility of agile workforce role to enhance organizational intelligence level.

The questions of this research are: 1) Is there a significant correlation between workforce agility and organizational intelligence? (the main question), 2) Does workforce agility predict the level of organizational intelligence? 3) Does OI predict the level of WFA? Because so far no research investigates the relationship between these two variables, we consider these variables both “predictor variable” and “dependent variable”. 4) Is there a significant correlation between WFA and each of the components of OI? 5) Is there a significant correlation between OI and each of the components of WFA? 6) Is there a significant relationship between demographics variables and WFA?

## 2. Theoretical Background

The conceptual definition of “workforce agility” is based on Breu, et al. (2001) concept analysis in which they defined WFA as environmental responsiveness in the context of turbulence and change (Bosco, 2007). WFA is an organization’s ability to rapidly respond and flexibility cope with the unexpected internal and external environmental changes (Bosco, 2007).

Intelligence and Competency were identified as constituting the strongest indicator of WFA. Intelligence involved collective environmental responsiveness of a workforce and its ability to interpret external changes to adjust appropriately and rapidly. Breu et al., (2001) defined competency in relation to information technology and software use, business and management integration process skills and alignment with the organization’s direction (Bosco, 2007).

In the model which is presented by Sherehiy (2008), workforce agility is considered as an agile performance or an observable behavior at work which are defined in following six main dimensions include:

- 1) Dealing with unpredictable and uncertain situations: key aspects of performance that relate to such events are how easily workers adjust to and deal with the unpredictable nature of these situations, how efficiently and smoothly they can shift their orientation or focus when necessary, and to what extent they take reasonable action, in spite of inherent uncertainty and ambiguity in the situation (Pulakos, Arad, & Donovan, 2000).
- 2) Creative problem solving: refers to Solution of novel, ill-defined and complex tasks and change related problems and also refers to initiate the activities help solving problems (Sherehiy, 2008). On the other hand, this aspect of performance requires the individual to bring complex matters or situation to their desired end or develop creative solutions to novel, difficult problems (Pulakos et al., 2000).
- 3) Professional flexibility: ability and competence of working on different tasks in different teams simultaneously.
- 4) Learning work tasks and procedures: learning new ways to perform a job, tasks; learning new skills set or tasks to retool a job or a new career (Sherehiy, 2008).
- 5) Interpersonal adaptability: Aspects of interpersonal adaptive performance that have been discussed in the literature include such things as demonstrating interpersonal flexibility ; adjusting interpersonal style to achieve a goal; adapting interpersonal behavior to work effectively with a new team, co-workers, or customers; and being a flexible, responsible service-provider who can effectively anticipate and fulfill customer needs (Pulakos et al., 2000).

6) Coping with work stress: Stress is an English word meaning pressure and force (Askari, 2011, p. 1653). Work stress often occurs when individuals' physical and emotional do not match or cannot handle their job demands, constraints and/or opportunities (Ismail, Yao, & Yunus, 2009). In this literature, "coping with stress" means the abilities of handling stressful & hard situations at work.

Albrecht in his book named "The power of mind at work" defined "organizational intelligence" as a capacity of an organization to mobilize all of its brain power, and focus that brain power on achieving the mission (Albrecht, 2003). Accordingly, he presented an organizational intelligence model composed of seven elements as follows:

1) Strategic Vision: strategic vision refers to the capacity to create evolve, and express the purpose of the enterprise (Nasabi & Safarpour, 2009). This means a feasible plan for leading an organization towards its main goals (Kordestani, Kafchah, & Khaksar, 2013). Shahraki, Yaghoobi and Fard (2011) believe that organizations make an attempt for change priorities, strategic vision and their traditional models in order to adapt with turbulent and volatile market.

2) Shared Fate: When all or most of the people involved in the enterprise, including associated stakeholders like key suppliers and business partners, and in some cases even the families of its members, know what the mission is, have a sense of common purpose, and understand their individual parts in the algebra of its success, they can act synergistically to achieve the vision, this sense that "We are all in the same boat" creates a powerful sense of community. Without a sense of shared fate, the psychological tone of the culture degenerates into a "Look out for number one" spirit (Nasabi & Safarpour, 2009).

3) Appetite for Change: In smart organization, change represents challenge, opportunity for new and exciting experiences, and a chance to tackle something new. People in these environments see the need to reinvent the business model as a welcome and stimulating challenge, and a chance to learn new ways of succeeding (Nasabi & Safarpour, 2009).

4) Heart: The element of heart involves the willingness to give more than the standard. Organizational psychologists refer to discretionary effort as the amount of energy the members of the organization contribute over and above the level they have "contracted" to provide (Nasabi & Safarpour, 2009).

5) Alignment and Congruence: Any group of more than a dozen people will start bumping into one another without a set of rules to operate by. They must organize themselves for the mission, divide up jobs and responsibilities, and work out a set of rules for interacting with one another and for dealing with the environment. In the intelligent organization the system, broadly defined, all come together to enable the people to achieve the mission (Nasabi & Safarpour, 2009).

6) Knowledge Deployment: More and more these days, enterprises succeed or fail based on the effective use of knowledge, information and data. Knowledge deployment deals with the capacity of the culture to make use of its valuable intellectual and informational resources. OI must include the free flow of knowledge throughout the culture and the careful balance between the conservation of sensitive information and the availability of information at key points of need. It must also include support and encouragement for new ideas, new inventions and an open-minded questioning of the status quo (Nasabi & Safarpour, 2009). According to Dove (1991), agility represents management's capability for effective applying of knowledge (Shahraki et al., 2011, p. 1113).

7) Performance pressure: It's not enough for executives and managers to be preoccupied with the performance of the enterprise. In the intelligent organization, everyone owns the performance proposition, the sense of what has to be achieved and the belief in the validity of its aims. Leaders can promote and support a sense of performance pressure, but it has the most impact when it is accepted by all members of the organization as a self-imposed set of mutual expectations and an operational imperative for shared success (Nasabi & Safarpour, 2009).

The proposed conceptual framework of the research as shown in figure (1) implies the existence of a relationship between WFA and OI.

A few researchers have studied factors influencing on workforce agility. These factors are: employee involvement practices, e.g., information sharing, training, reward, and power sharing (Sumukadas & Sawhney, 2004); workforce management practices (Kathuria & Partovi, 1999); work organization and agility strategy (Sherehiy, 2008); Workers' cross-training (Hopp & Van Oyen, 2004); and Internal factors (Personality, experience/knowledge and abilities) and external factors (Input, mechanism, output and constraint) investigated by Harvey, Koubek & Chin (1999). Organizational practices create the possibility to align or complete individual competencies to the business need of being agile (Stekelenburg, 2012, p. 16). In addition, among new working models, the strongest association with workforce agility was found for virtual teams within and across organizations, and communities of practices (Sherehiy et al., 2007). However, there's no study that investigated the relationship between WFA and

Organizational intelligence.

About the other demographic variables (e.g., age, sex, organizational position, and education level) no previous research was found.

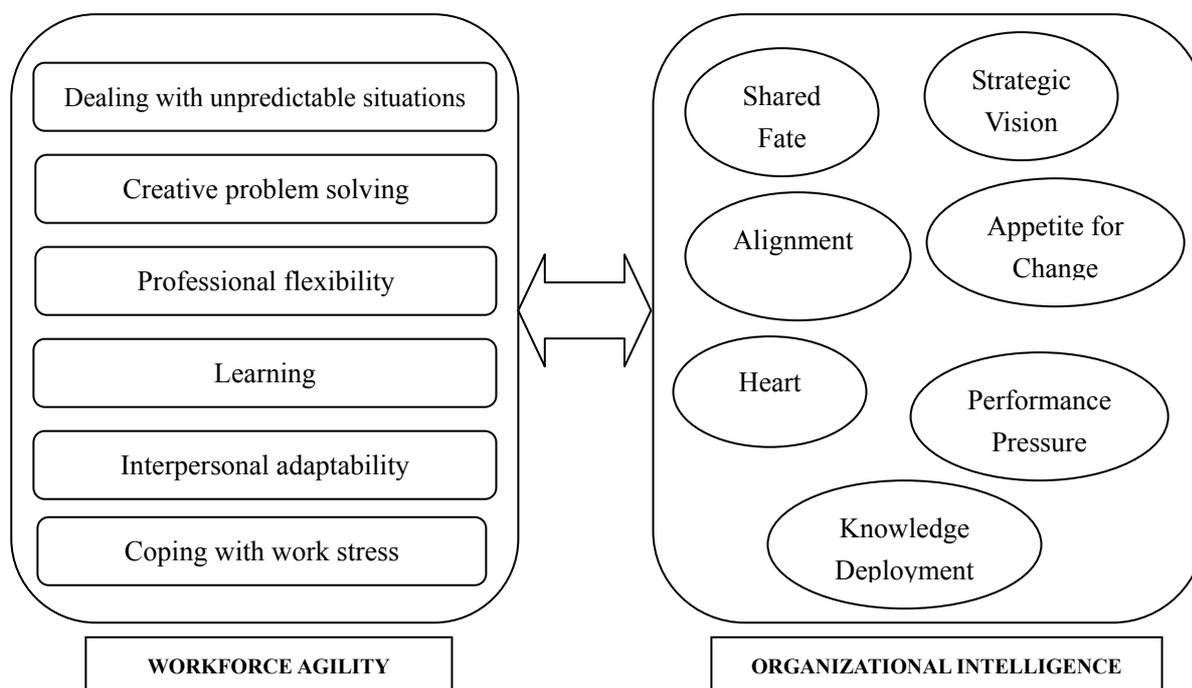


Figure 1. The conceptual model of the relation between WFA and OI

### 3. Methods

The sample consist of all 207 managers and employees working at each seven companies of "Iran High Council of Informatics" established in Tehran Province which awarded No. 1 grade at the both fields of 1) Customer-order software development, and 2) Presentation and support of domestic software packages and information files because of the dynamic environment such companies are in. Three types of questionnaire was used for data collection include: the five-point likert scale "Organizational intelligence questionnaire" of Albrecht, which contains 49 questions, and the "Workforce agility questionnaire" of Sherehiy (2008), which consists of 26 questions, and a questionnaire for gathering demographic data (sex, age, experience, organizational status, and education). Total of 207 questionnaire packages were distributed in person. Finally, 154 questionnaire packages were returned and 144 of them distinguish as useful and included. The data was analyzed using the SPSS software. Reliability of data-gathering tool was measured by Cronbach's coefficient Alfa (0.968 for the OI questionnaire and 0.877 for the WFA questionnaire). Normality of data was confirmed by One-Sample Kolmogorov-Smirnov Test. Pearson Correlation coefficient, Regression, Independent T-test and analysis of variance (ANOVA) was used to answer the questions of the research.

### 4. Results

The result of the data analysis to answer the questions is as follows:

The 1<sup>th</sup> & 2<sup>nd</sup> Questions: Regression Analyze was used to answering these questions. These following regression equations were established between OI and WFA:

$$Y=89.90 + 0.55X \quad (X=WFA, Y=OI) \quad (1)$$

This means that adding one point to workforce agility, organizational intelligence score will increase by as much as three points, so we can claim that this regression is linear.

$$Y=114.27 + 0.14 X \quad (X=OI, Y=WFA) \quad (2)$$

The above equation means that adding one point to organizational intelligence, workforce agility score will increase by as much as three points. So, this regression is linear.

The 3<sup>rd</sup> question: Using Pearson correlation coefficient, revealed the Correlation between WFA and OI is positive and significant (Table 1).

Table 1. Correlations between WFA and OI

		Organizational intelligence	Workforce agility
Organizational intelligence	Pearson Correlation	1	.285**
	Sig. (2-tailed)		.001
	N	144	144
Workforce agility	Pearson Correlation	.285**	1
	Sig. (2-tailed)	.001	
	N	144	144

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

The 4<sup>th</sup> Question: Examining to answer this question indicated the Correlation between WFA and OI components (except strategic vision) is positive and significant (table 2).

Table 2. Correlations between WFA and OI components

	WFA	Strategic Vision	Shared Fate	Appetite For Change	Heart	Alignment	Knowledge Development	Performance Pleasure
WFA	Pearson Correlation	1	.144	.235**	.214**	.361**	.254**	.258**
	Sig. (2-tailed)		.084	.005	.010	.000	.002	.004
	N	144	144	144	144	144	144	144

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

\* . Correlation is significant at the 0.05 level (2-tailed).

The 5<sup>th</sup>: In table 3, the results of Pearson Correlation reveal that all obtained sig. are less than 0.05 (except the sig. related to interpersonal adaptability) therefore, data analysis indicated the relationship between WFA components and OI (except interpersonal adaptability) is positive and significant.

Table 3. Correlations between OI and WFA components

	OI	Dealing Unpredictable Situations	With Creative Problem Solving	Pro. Flexibility	Learning	Interpersonal Adaptability	Coping With Stress
OI	Pearson Correlation	1	.274**	.169**	.221**	.284**	.127
	Sig. (2-tailed)		.001	.043	.008	.001	.128
	N	144	144	144	144	144	144

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

\* . Correlation is significant at the 0.05 level (2-tailed).

The 6<sup>th</sup>: Concerning age and WFA, the obtained results of Pearson Correlation indicate that correlation coefficient is equal to 0.197 and sig=0.019. Regarding to the fact that sig=0.019 < 0.05, therefore a significant positive relationship between age and WFA is confirmed (table 4). Moreover, this table show that Pearson correlation coefficient about Experience and WFA is 0.259 and sig=0.002. Hence, we can confirm a positive significant relationship between these two variables.

Table 4. Correlations between two demographic variables (age, work experience) and WFA

		Age	Experience	Workforce Agility
Age	Pearson Correlation	1	.896**	.197*
	Sig. (2-tailed)		.000	.019
	N	142	142	142
Experience	Pearson Correlation	.896**	1	.259**
	Sig. (2-tailed)	.000	.000	.002
	N	142	142	142
Workforce Agility	Pearson Correlation	.197*	.259**	1
	Sig. (2-tailed)	.019	.002	
	N	142	142	144

Also in tables 5 & 6, T-test indicated the difference of WFA between gender groups is not significant. Because the obtained sig. is more than 0.05 (0.059 > 0.05).

Table 5. Variable sex: group statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
Workforce Agility	Man	92	139.5644	16.25603	1.69481
	Woman	50	134.1534	15.94189	2.25452

Table 6. Examining relationship between sex and WFA: Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference		
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
WFA	Equal variances assumed	.956	.330	1.907	140	.059	5.41103	2.83695	-.19776	11.01983
	Equal variances not assumed			1.918	102.417	.058	5.41103	2.82051	-.18315	11.00522

As we can see in tables 7 & 8, the T-test indicated the sig. (0.45) is less than 0.05, therefore difference of agility between managers and employees is significant ( $\alpha=5\%$ ).

Table 7. Variable organizational position: group statistics

	Organizational Position	N	Mean	Std. Deviation	Std. Error Mean
Workforce Agility	Employee	114	136.38	16.07323	1.50540
	Manager	29	143.17	16.25118	3.01777

Table 8. Examining relationship between organizational position and WFA: independent samples test

	Levene's Test for Equality of Variances		t-test for Equality of Means			Mean Error Difference	Std. Error Difference	95% Interval Difference Lower	Confidence of the Upper	
	F	Sig.	t	df	Sig. (2-tailed)					
WFA	Equal variances assumed	.353	.553	-2.026	141	.045	-6.78741	3.35025	-13.41063	-.16419
	Equal variances not assumed			-2.013	43.009	.050	-6.78741	3.37241	-13.58848	.01366

In table 10, it can be seen that obtained sig. is higher than 0.05 ( $0.964 > 0.05$ ). Accordingly, the analysis tables of ANOVA, demonstrated difference between three groups of education degree in terms of agility, are not significant (tables 9 & 10).

Table 9. Variable education degree: descriptive

	N	Mean	Std. Deviation	Std. Error	95% Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
High School Degree & Lower	25	138.50	17.24499	3.44900	131.3843	145.6211	96.00	170.80
WFA Associate and Bachelor's Degree	104	137.54	16.71655	1.63919	134.2920	140.7939	75.60	169.40
MA Upper &	14	138.04	11.48074	3.06836	131.4114	144.6690	116.20	155.40
Total	143	137.76	16.28386	1.36172	135.0675	140.4513	75.60	170.80

Table 10. Examining relationship between education degree and WFA: ANOVA

		Sum Squares	of df	Mean Square	F	Sig.
	Within Groups	37633.494	140	268.811		
	Total	37653.285	142			

## 5. Conclusions and Suggestions

As identified earlier, the regression quotation indicated that organizational intelligence is a significant predictor of workforce agility and vice versa. So, it's recommended to raise the level of WFA and OI components. In this regard, establishing of feedback system for employees, enhancing of employee work-life quality and participation, facilitating learning with applying of various techniques is suggested. To enhance HR flexibility internally, firms can develop employees with a wide range of skills and behavior repertoires through training or job rotation (Wu, 2011). Thus, managerial skills training, putting employees in decision-making situation along the career path, taking advantage of the cultural diversity of employees with communication skills training and elimination of emerging field of destructive conflict should be considered.

As previously mentioned, no relationship was found between diffusion of strategic vision among personnel and WFA. According to Darbi (2012), it is proposed the components of mission and vision statements be broken down into "measurable" or proxies of desired outcomes so employees can be schooled in them. In addition, the perception that mission and vision statements are solely meant for management or leadership is very rife amongst employees though they appreciate their importance to the institute. It is thus necessary to identify ways to disabuse their minds and inculcate a better sense of ownership in them. Finally, Since ownership is a prerequisite for impact, management's main area of focus must be towards getting employees to see and appreciate the mission and vision statements as theirs because the study shows that making them aware of the existence of the statements is just one step towards getting the needed impact on their attitudes to perform in an intelligent organization.

As mentioned before, a positive relationship was found between coping with stress and OI. Woods (1999) believes stress may cause different problems in people as follows: Lack of mental health, Lack of bodily health, and Reduction of efficiency, e.g., Job dissatisfaction, Absence, reduction of output and generally reduction of work level (Askari, 2011, p. 1653). Coping with stress, one can prevent these harmful results to act more intelligent.

In this research, the relation between learning and organizational intelligence was proved. So, substructure and processes required for learning should be developed. It's observed that organizations intelligence and productivity are increased by promotion of personnel's knowledge (Koupahi, Fakhri, & Ghanimat, 2013).

Matsuda defines OI as the intellectual ability of an organization for solving its problems (Kordestani et al., 2013). Confirming this definition, the result of this research showed a positive relationship between problem solving ability (as one of the agile workforce attribute) and IO.

There's no empirical study on demographic variables effect on WFA, before. Harvey et al. (1999) believe "work experience" is related to WFA. Our findings demonstrate this belief. About variable "age", the older individuals are the greater agility to be seen. It can be in relation with promotion of work experience along with aging. Concerning organizational position, as might be expected, agility of managers significantly was higher than the other employees. Commonly, a manager plays three kinds of roles, e.g., an interpersonal role, an informational role, and a decisional role (Mintzberg, 1973). In this regard, Katz (1974) identified three managerial skills that are essential to successful management: technical, human or relational, and conceptual. It is obvious managers need to be more agile than their employees to perform these roles. Finally, no relationship between gender and WFA or education level and WFA was found. According to what mentioned above about demographic variables, employment of professionals (regardless of gender, or merely emphasis on educational degree) is recommended.

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