

Review Article

ESTABLISHING AGILE ORGANIZATIONS THROUGH INFORMATION TECHNOLOGY AND THE IMPACT OF INTERNAL INFORMATION TECHNOLOGY SERVICES PERCEPTIONS ON THE QUALITY OF INFORMATION TECHNOLOGY SERVICES (IN SMALL AND MEDIUM INDUSTRIES OF THE ALBORZ PROVINCE)

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Abstract

The present research has been conducted aiming to establish agile organizations through information technology and the impact of internal information technology services perceptions on the quality of information technology services (in small and medium industries of the Alborz province). This research is a descriptive and field study, and regarding its goal, it is practical; the statistical population includes a part of small and medium industries located in the Alborz province. The data has been collected through the Industrial Towns Company of Alborz province, and includes all managers and experts of small and medium industries of Alborz province. The sampling method in this research is randomly available, and the questionnaire has been randomly and selectively distributed among the individuals of the population. In this research, the desired population has been considered as known (about 1,200 people). Therefore, Morgan table has been used to calculate the sample size. According to the table the statistical size is 291 people. The data collection method is as field, and the measurement tool is the questionnaire. The validity has been confirmed at an acceptable limit by the content and face validity method, and the reliability of measurement tool (questionnaire) has been confirmed by Cronbach's alpha (0.959). In order to analyze the data, at first the acceptability of theoretical model through LISREL software has been addressed, and then data analysis has been specified by the aid of path coefficient. The results show that the model is usable for the statistical population and the model fitness is acceptable. The results of data analysis show that there is a positive relationship between the perception of internal information technology services and the quality of information technology services. There is a positive relationship between the quality of information technology services and information technology agility. There is a positive relationship between the perception of internal information technology services and the agility of information technology services. There is a positive relationship between information technology agility and the agility of the organization

Keywords: Information Technology Agility, Perception of Internal Information Technology Services, the Agility of the Organization

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INTRODUCTION

Organizations take different forms to survive and maintain their status. One of the newest organizational forms is the form of agile organizations (Shirahi et al., 2007, 445). Organizational agility provides the ability of a company to cope with ever-changing and growing market conditions and to exploit business opportunities and unpredictable circumstances (Lu & Ramamurthy, 2011, 932). Information Technology Services are a relatively new concept in researches related to information technology that is a promising structure which can be implemented in order to improve information technology conditions. In this regard, information technology professionals seek to create a common perception of behavioral methods in the workplace by providing information technology services to the customers (Lowry & Wilson, 2016, 3). Creating a positive service environment in information technology is a feasible and measurable goal for the managers of this sector, and significantly affects the quality of information technology services sector (Jia et al., 2013, 52). Although many researches have been done in this area, the relationship between information technology resources and information technology agility needs to be investigated, and studies regarding information technology services as predictors of agility should be performed. Understanding other factors that affect agility can be investigated among academics and professionals as a great collection. Positive information technology service environment may provide the organizational context needed to create an effective and coordinated information technology sector and provide rapid and flexible responses to market changes, and it is partly because the environment of information technology services are associated with high quality services. Small and medium industries require activities

with high ratio of agility. Active companies face special conditions such as rapidly and increasingly changing technologies and market needs as well as environmental conditions and factors, and it is essential to promote their organizational capabilities to raise the level of technology to confront these dynamic and changing conditions. Promoting this capability appears to require high adaptability to environmental and technological conditions, and the ability to integrate and coordinate organizational resources with the changing needs of the society and technology.

Therefore, in this research, while analyzing agility and information technology, the creation of agile organizations through technology in order to increase the competition performance has been investigated and the most appropriate model for implementing agile systems has been designed and proposed. The researcher tries to investigate this inquiry because of the importance of the subject. Researcher by relying on information technology and internal information technology services, tries to address the issue of increasing agility capability in small and medium industries that face severely changing environment.

The general purpose of this research is to investigate and explain how agile organizations are created through information technology and the impact of internal information technology services perceptions on the quality of information technology services in small and medium industries of Alborz province, and with the applied goals of investigating the relationship between the perception of internal information technology services and the quality of information technology services and investigating the relationship between the quality of information technology services and the agility of

information technology and investigating the relationship between the perception of internal information technology services and the quality of information technology, and investigating the relationship between the agility of information technology and the agility of organization in small and medium industries of Alborz province. Therefore, this research has innovation in applied respect.

The relationship between the quality of information technology services and the perception of internal information technology services and the agility of information technology services may have been investigated so far, but in this research it has been shown as innovation that there is a positive relationship between the agility of the organization and information technology agility that has not been done so far.

Consequently, in this research it is argued that when an organization with information technology by presenting high quality services is able to adapt to rapidly changing demands, on this basis, it is suggested that information technology service quality is one of the aspects of organizational information technology resources that can facilitate the agility of the organization. This means that there is a widespread view of information technology resources beyond hardware and software components to provide information technology personnel services to meet business needs and support agility. That is, information technology agility is obtained from both the capability of employees and the information technology infrastructure. And the agility of information technology cannot be fully realized unless an organization provides information technology with effective and quality services. The information technology sector with strategic partnerships and investments in information technology infrastructure can be adapted regarding information technology agility based on customer needs. Therefore, in the present research, the creation of agile organizations through information technology and the impact of the perceptions of internal information technology services on the quality of information technology services has been investigated, and a model has been designed in this regard.

Research history

The Agility of Organizational

Small and medium industries face issues such as rapid and unpredictable changes, specific orders and customers' tastes, perfect quality and expectation of a very high level of services; thus they take different forms for survival and preserving their status. One of the newest organizational forms is organizational agility (Shirahi et al., 2007, 445). Organizational agility is an important factor enabling the organization to deal with changes more quickly and effectively, and in the best way use the potential opportunities emerged due to the changes, and move toward meeting predetermined goals (Rostami et al., 2015, 1). Currently, organizational agility is considered as one of the key and important factors in accomplishing the missions of the organization. The managers of small and medium industries require to prepare and compile the comprehensive programs of planning the organizational resources and information technology with organizational agility approach to reduce the costs and numerous risks, and increase efficiency, profitability, productivity and effectiveness (Sisamaraj Vasandar, 2013, 138). Organizational agility is formed through a process called "Agility processes and capabilities of the organization" under the supervision of the senior and operational managers and administrators of the organization. The goal of organizational agility is to improve and develop the organizational agility with the approaches such as the virtual organization and the virtual

team. Of course, agility may sometimes seem to be the integration of processes, members, and also organization features with advanced technologies. The term agility was applied for the first time to describe the capacity needed for modern production (Darehzereshki and Rozbahani, 2009). The term agility was first applied in 1991 by researchers at the University of Lehigh to describe a flexible production system that has the necessary capabilities to meet the rapidly changing market needs and can respond to customers' demands at the needed time. An extensive review of the agility literature shows that an agile organization can have successful performance and achieve the competitive advantage in the market through the capabilities of accountability, competence, flexibility and speed in the competitive environment (Yusuf et al., 2012, 2).

Agility is a new paradigm that emphasizes speed, adaptability to changes, dynamism and accountability. Agile methods have attracted considerable attention to themselves over the past 10 years (Deeb Vedingesir, 2008, 833). Compared to other developmental methods, agile systems have been increasingly welcomed by experts. Concerning the methods of developing agile systems, the researchers express that, with regard to the increasing turbulence and the unpredictability of the world around us, organizations and institutions are needed to be more responsive to the changes (Shirahi et al., 2007, 447). One of the fundamental transformations formed in the management of organizations is the change in the way organizations deal with environmental factors and technological changes and moving towards the agility of the organization (Lu & (Ram) Ramamurthy, 2011).

Agility makes possible the ability to overcome unexpected challenges to confront unprecedented threats to the working environment and to take advantage and benefit from the changes as growth and progress opportunities (Shahaie, 2006, 1). Almost in the past two decades, many scientists and scholars of management have investigated the role of agility in organizational performance and numerous research studies have been conducted in this regard (Ivari Vivari, 2011, 509). In fact, agility is a necessity for surviving against competitors under changing environments for interacting and managing environmental challenges. And agility creates the ability of the organization to adapt to changes, and to identify and exploit effectively the opportunities due to the change (Bemani & Moheimi, 2017, 1). Organizations that want to stay agile should have information systems that can change rapidly in the future. Researchers argue that agility and organizational performance are severely influenced by information technology capabilities. Information technology strategy researches show that information technology resources should be designed to support the organization's flexibility and that these flexible resources of information technology can increase the coordinated impacts of information technology business on organizational agility (Lowry and Wilson, 2016, 5). Although the importance of organizational agility is increasingly recognizable, there is little information on how to make a company more agile (Mikalef & Pateli, 2017, 3). Therefore, all manufacturers, organizations and institutions have to seek agility to compete in the 21st century, as modern organizations face increasing pressure to find new ways of efficient competition in the dynamic market of the world. Agility promotes the ability of the organization to deliver high quality products and services, and is therefore an important factor for the productivity of the organization (Nikpour & Berkam, 2012, 151).

Table 1: Variables Affecting the Agility of Organization

Variable	Source
Improvement and Promotion of Information Technology Indicators	Ghasemzadeh et al (2017)
Business Strategy	Shahsavari Pour et al. (2017)

Information Technology Dimensions	Ghasemzadeh et al. (2017)
The Impact of Information Technology	Khoshdel and Ghahremani (2016)
Information technology	Rostami et al. (2015)

Information Technology Services

Organizations need information technology services to offer desirable services to internal and external customers in the complex environment. Woolley and Hobbs (2008) recall that organizations can achieve their goals by using information technology agility and investing in information technology (Lowry & Wilson, 2016, 2). An information technology service environment includes information technology services leadership and service evaluation (Jia et al., 2008 and 2013). In summary, the information technology service climate represents organizational support for offering desirable services to information technology customers, and it is expected that quality information technology exists in an organization with a desirable information technology services environment. It has been shown in the previous researches that the quality of information technology services improves performance (Lowry & Wilson, 2016, 6).

The information technology sector determines how organizations should adapt to changing market conditions, as the agility of modern organizations increasingly depends on the information technology sectors. It is important to understand the key factors related to the point that how business information technology departments contribute to information technology agility (Peppard & Ward, 2004; Galliers, 2006). In most organizations, managing information technology (IT) sector is a difficult task. While many researches have focused on understanding organizational issues such as information technology strategy and innovation, information technology outsourcing, information technology structure, information technology alignment, and information systems management, significant gaps have remained in understanding how organizations can manage effectively and maintain the leverage of information technology resources (Lowry Wilson, 2016, 1). Among these gaps, it is very important to understand how organizational structure such as information systems or the organization's environment can affect the effective management of information technology (Walsh, 2014, 147). Although various information technology providers and its consultants have applied their key strategies to help organizations achieve agility, understanding the relationship between corporate agility and information technology is limited (Lu & Rammurthy, 2011, 934). Information technology providers offer a variety of technical and organizational solutions for achieving agility, and organizational software. Agility through systems and the organizational collection through applications, provide the capacity of the organization to deliver the required capabilities (Tallon, 2008, 22). In this respect, understanding the impact of agility systems on agility process is important. The information technology services environment provides the organizational context needed to create an effective and coordinated information technology sector, making faster and more flexible responses to changing market conditions possible; in other words, information technology services environment is related to excellent quality of information technology services (the services performance level of the customers of information technology provided to the organization) (Lowry Wilson, 2016, 2).

Quality of Information Technology Services

Creating a positive information technology service environment in the information technology sector is a practical and measurable goal for information technology managers and significantly impacts on the quality of information technology services (Jia & Rich, 2013). The quality of information technology services is defined as the degree of service that the information technology sector provides to customers that is consistent with customers' expectations. Most information technology sector customers include the users inside the organization, not its customers (Lowry Wilson, 2016, 4), and understanding information technology services refers to the point that employees have made their workplace behavior appropriate and supported providing information technology

services to protect their customers in the business (Lowry Wilson, 2016, 3).

Although, large scales of previous researches have investigated the relationship between information technology resources and information technology agility, there are few studies that have examined the role of information technology in the internal information technology service perceptions and the quality of information technology services. Previous studies on agility and information technology have investigated some aspects of this process. In this regard, Schneider (1990) and Schneider et al. (1998) presented researches that ultimately led to increasing customers' satisfaction and the quality of service provided. In the context of information technology services, information technology services environment as a predictor has impacted on the quality of information technology services (Lowry Wilson, 2016, 6). Jia et al. (2013) showed that focusing on customers' service in business and communications leads to shortening development cycle time, increased ability to accept changes in system projects, and ultimately better results in the projects (Jia et al., 2013, 213). Fink et al., (2007) showed that the abilities of information technology personnel to provide infrastructure capabilities that facilitate information technology agility are required. Their findings provide evidence that information technology employees must not only have accurate technical skills about information technology, but also must have business abilities based on information technology. Galagohar et al. (2008) strongly emphasized the need to standardize and modify previous services provided to achieve agility in information technology. They argue that traditional decentralized methods have limitations to provide services and do not lead to information technology agility. The quality of information technology services is one of the aspects of organizational information technology resources that can facilitate the agility of the organization. This means that there is a widespread view of information technology resources beyond hardware and software components to provide information technology personnel services to meet business needs and support agility. It means that, information technology agility is obtained from both the capability of employees and the information technology infrastructure. And the agility of information technology cannot be fully realized unless an information technology organization provides effective and quality services. As a measure of the service quality related to information technology provided by personnel, it is argued that the perceptions of the quality of information technology services should be as an effective process in determining the effectiveness of information technology duties in support of agile business processes (Lowry Wilson, 2016, 7).

In summary, it can be said that the quality of information technology services affects an organization's ability for innovation and responding to changing market conditions. Therefore, excellent service quality should enhance the agility of information technology of the organization. Internal perceptions of information technology services and information technology agility propose an indirect relationship between internal information technology perceptions and information technology agility. Jia et al. (2008) reported during a qualitative interview that a favorable environment of information technology services may extend shorter development periods and greater ability to accept the change. Researches about information technology agility convincingly show that effective information technology resources provide consistent responses to market conditions for change (Samburati et al., 2003; Fink et al., 2007). Therefore, many information technology capabilities must be common among organizations that have positive and negative features of information technology services. Positive and mutual interactions between the information technology sector and the organization are wider and affect the ability of offering innovative technologies. Information technology employees can communicate correctly, and often have a mutual understanding with business units and facilitate flexible

information technology. Information technology units that emphasize and strengthen customer and service focus can provide competitive advantages to the organizations trying to respond to the change. When this customer has orientation towards the organization, the organization as a whole can respond quickly and effectively to the changing conditions of the market (Samburati et al., 2003).

Research Method

Regarding that the present research has been conducted aiming to create agile organizations through information technology and the impact of the perceptions of internal information technology services on the quality of information technology services (Case study: Alborz Small and Medium Industries), this research is a descriptive and field study and it is applied, regarding the goal. The statistical population includes a part of small industries located in Alborz province, the data has been collected through Alborz Province Industrial Towns Company, and includes all managers and experts of small and medium

industries of the Alborz province. The sampling method in this research is randomly available, and the questionnaire has been distributed among the population randomly and selectively. In this research, the desired population has been considered as known (about 1,200 people). Therefore, Morgan table has been used to calculate sample size. According to the table, the statistical sample size is 291 people. The data collection method is field and the measurement tool is a questionnaire. The validity has been confirmed by content and face validity method at acceptable limit, and the reliability of measurement tool (questionnaire) has been confirmed by Cronbach's alpha (0.959). In this research, in order to measure the causal relationship between research variables, structural equation modeling was used, and the analysis of data collected from the questionnaire has been performed by the aid of LISREL and SPSS software.

Regarding the points stated in the research literature, research variables have been shown in the following conceptual model:

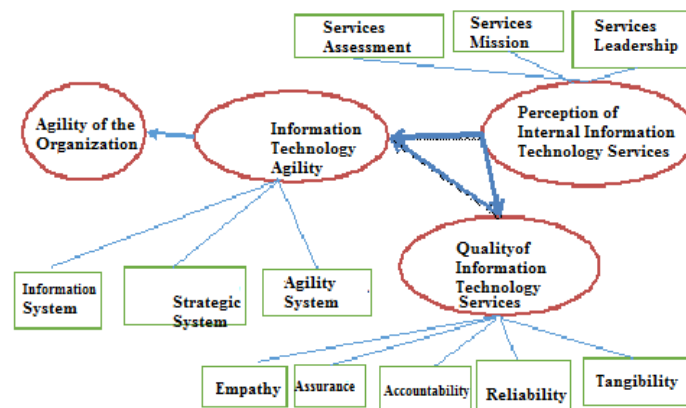


Figure 1: Research Conceptual Model

(Source: Lowry Wilson (2016), Richvaran (2017) Lu & Ramamurthy (2011))

Research Hypotheses

1. There is a positive relationship between the perception of internal information technology services and the quality of information technology services.
2. There is a positive relationship between the quality of information technology services and information technology agility.
3. There is a positive relationship between the perception of internal information technology services and the quality of information technology services.
4. There is a positive relationship between information technology agility and the agility of the organization.

Research Findings

In this research, since the standard questionnaire has been taken from previous researches, to determine the validity of the research tool, in addition to going through stages of explaining a theoretical model to prepare the questionnaire, based on the existing documents in the scientific research methods, at first

an introductory test about the questionnaire was administered. For this purpose, the initial questionnaire has been provided to 10 managers and consumers, and supervisor and advisor professors.

To achieve the content validity, after designing the questions of questionnaire according to the theoretical bases and the research goals, the questionnaire has been tested on a group of 25 respondents, and according to their opinions, ambiguous, vague, and unrelated questions have been identified and that group of questions that are correctable have been edited again and compiled in the final questionnaire.

In this research, with the initial distribution of 30 questionnaires, the reliability of the questions has been investigated and final distribution has been done. It should be mentioned that the questionnaire reliability of this research has been confirmed by the number 0.959, that is an acceptable coefficient.

Table 2: Calculation of Questionnaire Cronbach's Alpha

Section Investigated	Cronbach's Alpha Indicator	Number of Questions	Number of Samples
Perception of internal information technology services	0.890	14	291
Information technology service quality	0.901	17	291
Information technology agility	0.892	9	291
Agility of the organization	0.854	6	291

In order to analyze the data, at first data distribution status has been investigated, using Kolmogorov-Smirnov distribution test. H₀: Data has a normal distribution

H₁: Data does not have a normal distribution

Table 3: Kolmogorov-Smirnov Test

Variable Name	Mean	Error Level	Significance Level	Test Result
Perception of internal information technology services	3.195	0.05	0.375	H ₀ Accepted
Information technology service quality	2.547	0.05	0.227	H ₀ Accepted
Information technology agility	2.948	0.05	0.337	H ₀ Accepted
Agility of the organization	2.854	0.05	0.958	H ₀ Accepted

According to the obtained data and the significance level, since the value of significance level in the variables is higher than the error level (0.05), so we accept the hypothesis H₀ and confirm the hypothesis that the variables are normal.

In the following diagram the t coefficients between the questions and the dependent and mediator variables have been shown. The variable of the agility of organization has been measured by six questions. LISREL software assumes the t value for the first questions (dependent and mediator variables) constant. So no arrow is connected to them. But in the next questions the t value has been specified which indicates the significance of the questions.

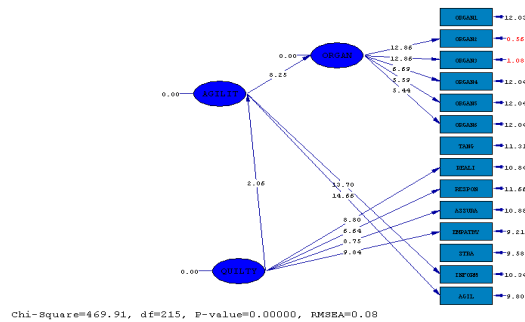


Figure 2: Basic Model with T Coefficients for Y Variables (Mediator and Dependent Variables)

In the following figure the path coefficients between questions and mediator and dependent variables have been shown. The agility of the organization variable has been measured by six questions. The path coefficient for the first question of the

agility of the organization variable is 0.60, (meaning that approximately 60% of the variance is explained), and the numbers shown next to the questions mean an error ratio that cannot be explained by the subsequent questions.

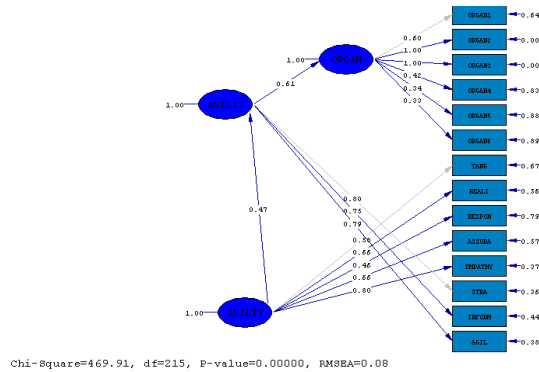


Figure 3: Basic Model with Path Coefficients for Y Variables (Mediator and Dependent Variables)

In the following figure the path coefficients between dependent variable have been shown. The perception of internal information technology services variable has been measured by three dimensions. The path coefficient value for the first

dimension is 0.73; in other words the impact ratio of this dimension on the perception of internal information technology services variable is 73% (approximately 73% of the variance of the variable is explained by this dimension).

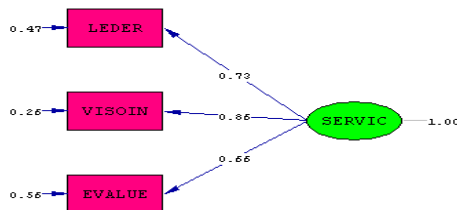


Figure 4: Base Model with Path Coefficients for (Independent) X Variables

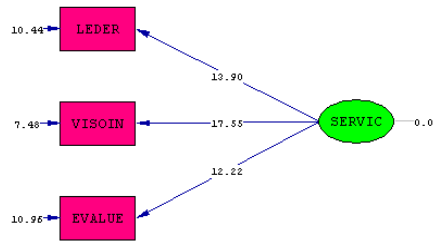


Figure 5: Base with T Coefficients for the (Independent) X variable

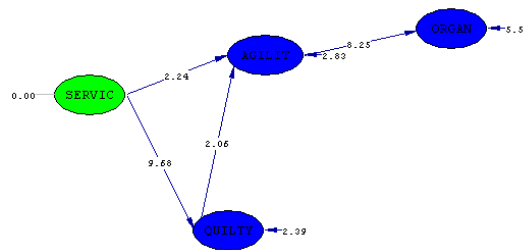


Figure 6: Path Coefficients of the Research Structural Model between Independent, Mediator and Dependent Variables

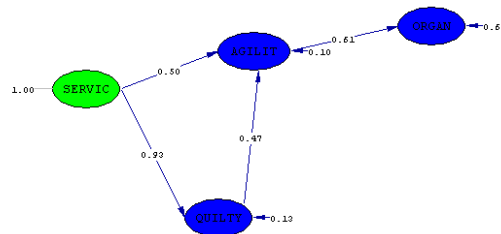


Figure 7: T-Statistic for the Research Structural Model between Independent, Mediator and Dependent Variables

Table 4: Assessment Scale of Measurement Variables

Variables	Path Coefficient	T Value
Service Leadership	0.73	13.90
Services Vision	0.86	17.55
Services Evaluation	0.66	12.22
Tangibility	0.79	---
Reliability	0.66	8.80
Accountability	0.46	6.64
Assurance	0.66	8.75
Empathy	0.80	9.84
Strategic System	0.80	---
Information System	0.79	13.70
Agility System	0.75	14.66
Agility of the Organization	0.60	----
Agility of the Organization	1.00	12.86
Agility of the Organization	1.00	12.86
Agility of the Organization	0.42	6.69
Agility of the Organization	0.34	5.59
Agility of the Organization	0.33	5.44

In the above table, path coefficients and t values between variables and questions specific to each variable with respect to the LISREL software output diagrams have been presented.

1. Testing The First Hypothesis

Table 5: Results of Standard Coefficients and T Statistic of the First Hypothesis

Path		
Perception of internal information technology services and the quality of information technology services	Estimated Coefficients	T Statistics
	0.93	9.68
Hypothesis Confirmed		

Based on the results shown in table 5, the relationship between the perception of internal information technology services and the quality of information technology services is supported by data, and the path that connects these two variables is positive and significant (at the error level of 5% is significant) (

$t = 9.68\gamma_{11} = 0.93$). Since the t value is higher than 1.96, so it can be said with 95% confidence that there is a positive relationship between the perception of internal information technology services and the quality of information technology services.

2. Testing the Second Hypothesis

Table 6: Results of Standard Coefficients and T-Statistic of Second Hypothesis

Path		
The quality of information technology and information technology agility	Estimated Coefficients	T Statistics
	0.50	2.24
Hypothesis Confirmed		

Based on the results shown in table 6, the relationship between the quality of information technology services and information technology agility has been supported by data, and the path that relates these two variables is positive and significant (at 5% error level is significant) ($t = 2.24\gamma_{12} = 0.50$). Since the

t value is higher than 1.96, thus with 95% confidence can be expressed that there is a positive relationship between information technology service quality and information technology agility.

3. Testing the Third Hypothesis

Table 7: Results of Standard Coefficients and T Statistic of the Third Hypothesis

Path		
Perception of internal information technology services and the information technology agility	Estimated Coefficients	T Statistics
	0.47	2.06
Hypothesis Confirmed		

Based on the results shown in table 7, the relationship between the perception of internal information technology services and information technology agility has been supported by data, and the path that relates these two variables is positive and significant (at 5% error level is significant) (

$t = 2.06\beta_{12} = 0.47$). Since the t value is higher than 1.96, thus with 95% confidence can be expressed that there is a positive relationship between the perception of internal information technology service and information technology agility.

4. Testing the Fourth Hypothesis

Table 8: Results of Standard Coefficients and T Statistic of the Fourth Hypothesis

Path		
Information technology agility and the agility of the organization	Estimated Coefficients	T Statistics
	0.61	8.25
Hypothesis Confirmed		

Based on the results shown in table 8, the relationship between information technology agility and the agility of organization has been supported by data and the path that relates these two variables is positive and significant (at 5% error level is significant) ($t = 8.25\beta_{23} = 0.61$). Since the t value is higher than 1.96, thus with 95% confidence it can be expressed that there is a positive relationship between information technology agility and the agility of the organization.

In the following table, the fitness indicators of the research model has been shown; as it is observed in table 6, the ratio of correspondence or goodness of fit indicator (GFI) of the model is equal to 0.88, and the adjusted goodness of fit indicator (AGFI) is equal to 0.87, and the root mean square error of approximation (RMSEA) is equal to 0.08, and the comparative fit index (CFI) is equal to 0.83, all of which are at a relatively acceptable level.

Table 9: Fit Indicators of Research Model

Estimated Values	Standard Values	Macro	Fit Indicator
469.91	By dividing Chi-square to the degree of freedom, the value should be lower than three	Chi-Square	Chi-Square value
215	-----	Degree of Freedom	Degree of freedom
0.08	0.05	RMSEA	The root mean square error of approximation
0.81	0.90	NFI	Normed fit indicator
0.88	0.90	NNFI	Non-normed fit indicator
0.83	0.90	CFI	Comparative fit indicator
0.88	0.90	GFI	Goodness of fit indicator
0.87	0.90	AGFI	Adjusted goodness of fit indicator

Regarding that the Chi-square value, and the Chi-square ratio to the degree of freedom have been obtained 2.3 in the model of this research, and other fitness indicators such as RMSEA, AGFA

and GFI are all also appropriate, therefore, based on the results, it can be said that the model is applicable for the statistical population, and the model fitness is acceptable.

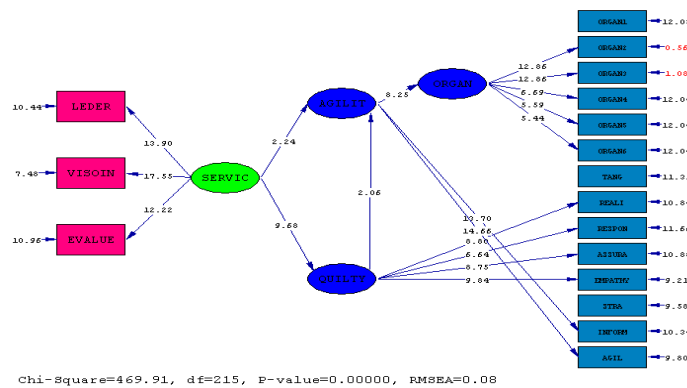


Figure 8: T Values of Structural Model (Variables and Questions)

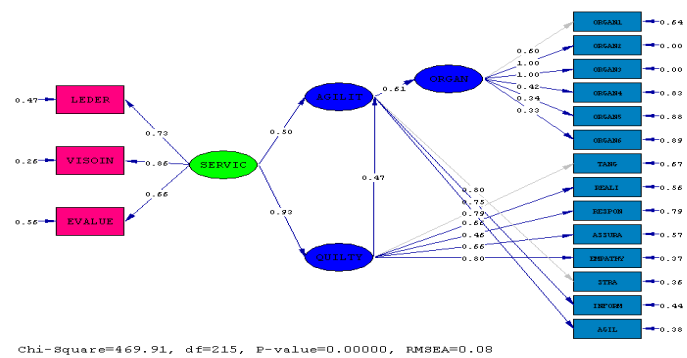


Figure 9: The Values of Path Coefficient for Structural Model (Variables and Questions)

DISCUSSION AND CONCLUSION

Based on the results of the first research hypothesis, the relationship between the perception of internal information technology services and the perception of information technology services is 0.93 units, and the path that connects these two variables is positive and significant (at 5% error level is significant) ($t = 9.68\gamma_{11} = 0.93$). Since the t value is higher than 1.96, on this basis the researcher's hypothesis with 95% confidence indicating the relationship of the perception of internal information technology and the quality of information technology services is confirmed. Perception of internal information technology services has been investigated by three components of services leadership, services vision, and services evaluation. The results show that the impact ratio of services vision is more than the other components. Therefore, without a proper and necessary "vision" or "services vision" companies do not know which strategy to compile. Thus, every

organization must have a clear vision of internal information technology services before it wants to compile its future strategies. The vision is the inner desire of the members of the organization that is embedded in their brains and hearts. The vision should provide a clear understanding of where the organization is going today and also the roadmap for moving towards the future. The vital role of the organization in the lives of people requires that members know what are the specific and basic beliefs based on which the organization establishes the quality of services. Information technology and the quality of information technology services are considered as two essential tools any organization needs. Information technology has created tremendous changes in access to information, and has provided stronger communication contexts. These technologies have enhanced the importance and value of information and communication. As a result, small and medium industries can benefit from the advantages of this technology. The development of information technology has created a huge

network with global scale (Internet), and has made it possible to access information easier and faster. In advanced countries, information technology is one of the most important tools for service delivery, and small and medium industries are increasing their capabilities and are benefiting from its advantages through this process. Therefore, small and large industries should be able to use a variety of technologies, especially smart software for higher efficiency in the future, and by the aid of these software identify market opportunities and customers' expected services, business partners, and suppliers better, and collect more accurate and more proper information. Industries can perceive knowledge and concepts better by improving technology levels, and create simpler and broader communication within the organization. The results of the present research are in line with the findings of Mikalef & Pateli (2017), Lowry and Wilson (2016) and Chakavarty et al. (2013).

Based on the results of the second research hypothesis, the relationship between information technology service quality and information technology agility is 0.5 units, and the path connecting these two variables is positive and significant (at 5% error level is significant) ($t = 2.24\gamma_{12} = 0.50$). Since the t value is higher than 1.96, on this basis of the researcher's hypothesis with 95% confidence indicating the relationship between information technology services quality and information technology agility is confirmed. The quality of information technology services has been investigated by 5 components of tangibility, reliability, accountability, assurance and empathy. The results show that the impact ratio of empathy is higher than other components. As it was stated, the quality of information technology services enables organizations to become aware of internal and external information flows. Therefore, industries must be able to identify, assimilate, and implement information technology agility. Small and medium industries in Alborz province by creating and utilizing information technology must provide knowledge capabilities, advanced knowledge technologies, collaboration-based tools, knowledge sharing, organizational resource planning, value chain, customer relationship management, support technologies, and the analytical and follow-up decision must provide the context for the agility of the organization. Since agility has a basic role in improving the efficiency and quality of operational and performance process outputs, hence the companies seeking to improve the quality and efficiency of production process outputs, increasing market share and sales, can be suggested to strengthen capabilities such as tangibility, reliability, accountability, assurance, empathy, and integrity of their processes based on organizational opportunities strengthening these factors require the use of information technology capabilities improvement. Also, according to the results it can be said that the authorities and managers of industries should feel responsible for offering services to people and their needs and demands, and respond positively to their rational demands. They should also respect the demands of individuals and in any condition be prepared to respond to their requests and interestingly remove their problems. Employees having sufficient knowledge, skill and ability, and reassuring behavior can be an important factor in the satisfaction with receiving services. Regarding the impact of accountability and assurance on service delivery, the necessity of managers' attention to it is essential. It is also suggested to use information technology agility process in industries and modify it to achieve desirable results. The agility of information technology enables industries to obtain more innovative exploitation from the existing information flow and knowledge, and meet customers' needs and increase their market share. The results of the present research are in line with the findings of Mikalef & Pateli (2017), Lowry and Wilson (2016) and Chakavarty et al. (2013).

Based on the results of the third research hypothesis, the relationship between the perception of internal information technology services and information technology agility is 0.47 units, and the path that connects these two variables is positive

and significant (at 5% error level is significant) ($t = 2.06\beta_{12} = 0.47$). Since the t value is higher than 1.96, the researcher's hypothesis with 95% confidence indicating the relationship of the perception of internal information technology services and the information technology agility is confirmed. Information technology plays an effective role in a rapidly changing environment. Researches have shown that information technology capabilities are an important source of companies, and are a type of organizational capability that can support working activities and processes by sorting and assembling other resources that are important and effective in identifying and deploying information technology based resources or other resources and agility. Advancement in information technology agility provides the possibility of information sharing, production planning improvement, inventory management and distribution. Agility is a vital area in which companies must develop their capabilities. The agility of information technology is an important dimension in which the capabilities of the company must be evaluated and investigated, in order to meet the needs, demands and priorities of the customers, and market. Information technology agility provides the possibility of marketing and identifying important market signals, evaluating new processes or services, and designing and executing effective responses to market change for the company, and have a significant impact on product development, and long-term customer relationship. Regarding the research results, it can be suggested that small and medium industries focus on information technology agility. Because information technology by creating the context to improve the processes, service excellence and customer intimacy and gaining competitive advantage provides the possibility of rapidly responding to environmental and market changes. The results of the present research are in line with the findings of Mikalef & Pateli (2017), Lowry and Wilson (2016) and Chakavarty et al. (2013).

Based on the results of the fourth research hypothesis, the relationship between information technology agility and the agility of organization is 0.61 units, and the path that connects these two variables is positive and significant (at 5% error level is significant) ($t = 8.25\beta_{23} = 0.61$). Since the t value is higher than 1.96, the researcher's hypotheses with 95% confidence indicating the relationship of information technology agility and the agility of the organization is confirmed. The competitive environment is intensively changing and the type of changes has also become very diverse, so the companies need information technology to be able to create a sustainable competitive advantage for themselves. Many researchers suggest that, if with regard to the changing conditions, industries want to use the past competitive advantages, they must move between information technology agility and the agility of the organization. Agility can provide an appropriate context to speed up the process of operations and identifying environmental changes. Agile organizations can easily create a significant change in focusing, diversifying, and modernizing their business to accelerate achieving a specific goal, so that this point can create valuable opportunities for industries. On this basis, the industries are able to overtake the competition and the key of this point is to create a strategic plan that reveals a broad map of the main capabilities, abilities, and skills of the company. Agile industries have a good position, and have advantages such as speed, accessing market before competitors through new products, and providing the products needed by customers before the creation and proposing their need. For this purpose, managers should invest in technologies that create operational flexibility at the factory level. It is also recommended that small and medium industries implement their strategy based on the agility of information technology and modify and improve their processes and operations wherever necessary by learning from the market and customers. The results of the present research are in line with the research results of Feali and Afarashteh (2017), Fahimi and Hosseinzadeh (2017), Ghasemzadeh et al. (2017) Shahsavari

Pour et al. (2017) and Rostami et al. (2015) Mikalef & Pateli (2017), Lowry and Wilson (2016).

REFERENCES

- Rostami, Ali; Morteza Sharifi & Davood Bakhshalizadeh, 2015, "Investigating the Impact of Information Technology Acceptance on the organizational Agility of Banks and Insurance Agencies of Gilan Province", Annual Conference on Business Management and Economics, Electronically, the Managers of Idehpardaz Payetakht Vira Institute
- Shahsavari Pour, Nasser; Shahla Rezvandoost; Amir Mirzaei and Shahla Heidarbeigi, 2017, "The Relationship between Information Technology Strategy Alignment and Business Strategy with Organizational Agility in Software Companies", Quarterly Journal of Information Technology Management Studies, 5 (19)
- Darehzereshki, Naimeh, Roozbehani, Sina, 2009 "Evaluation of Agility in Service Organizations; Case Study: Governmental Organizations in Yazd Province", 7th International Conference on Management
- Shahaie, Behnam, 2006: "The Human Dimension of Organization Agility", Journal of Tadbir, No. 175, December, Industrial Management Organization
- Bemani, Atefeh and Zahra Mohemi, 2017, "The Role of Information Technology in Organizational Agility Development", Second Annual Conference on Economics, Management and Accounting, Ahvaz, Shahid Chamran University, Khuzestan Industry, Mine and Trade Organization
- Nikpour, Amin, Berkam, Yasser, 2012 "Organizational Agility and the Model of Achieving an Agile Organization" Journal of Development Strategy, No. 30, Summer 2012, p. 151
- Feali, Razieh and Azad Afrashteh, 2017, "Investigating the Impact of Information Technology on Competitive Advantage through the Agility of the Organization; Case Study: Ahvaz Bank Tejarat", Second International Conference on Management and Accounting, Tehran, Salehan Higher Education Institute
- Fahimi, Javad and Ali Hosseinzadeh, 2017, "Investigating the Impact of the Relationship of Information Technology Dimensions on the Agility of Organization (Case Study: Khorasan Razavi Agricultural Jihad Organization Employees)", National Conference on Modern Researches in Management, Economics and Humanities, Kazerun, Islamic Azad University, Kazerun Unit
- Ghasemzadeh, Mojgan; Saeed Jafarinia and Mahmoud Otadi, 2017, "Explaining the Relationship between Information Technology Dimensions and Organizational Agility from the Viewpoint of Bank Managers and Employees", Third International Conference on Management, Accounting and Knowledge-Based Economy with Emphasis on Resistance Economics, Tehran, Allameh Majlesi University
- Sherehiy, B. Karwowski, W., J.K. Layer, A review on enterprise agility: concepts, frameworks, and attributes, International Journal of Industrial Ergonomics 37 (2007) 445-460.
- Lu, Y., & Rammurthy, K. (2011). Understanding the link between information technology capability and organizational agility: an empirical examination. MIS Quarterly, 35(1), 931-954.
- Lowry, P. B., & Wilson, D. (2016). Creating agile organizations through IT: The influence of internal IT service perceptions on IT service quality and IT agility. The Journal of Strategic Information Systems, 25(3), 211-226.
- Jia, R., Reich, B.H., 2013. IT service climate, antecedents and IT service quality outcomes: some initial evidence. J. Strat. Inf. Syst. 22 (1), 51-69.
- Seethamraju Ravi. Sundar, Diatha Krishna .2013, Influence of ERP systems on business process agility, IIMB Management Review (2013) 25, pp: 137-149.
- Iivari, Juhani, Iivari, Netta 2011, The relationship between organizational culture and the deployment of agile methods, Information and Software Technology 53 pp: 509-520.
- Walsh, I., 2014. A strategic path to study IT use through users' IT culture and IT needs: a mixed-method grounded theory. J. Strat. Inf. Syst. 23 (2), 146-173.
- Jia, R., Reich, B.H., 2013. IT service climate, antecedents and IT service quality outcomes: some initial evidence. J. Strat. Inf. Syst. 22 (1), 51-69.
- Sambamurthy, V., Anandhi, B., Varun, G., 2003. Shaping agility through digital options: reconceptualizing the role of information technology in contemporary firms. MIS Quart. 27 (2), 237-263.
- Jia, R., Reich, B.H., 2008. IT service climate: the validation of an antecedent construct for IT service quality. In: Paper Presented at the 29th International
- Peppard, J., Ward, J., 2004. Beyond strategic information systems: towards an IS capability. J. Strat. Inf. Syst. 13 (2), 167-194.
- Galliers, R.D., 2006. Strategizing for agility: confronting information systems inflexibility. In: Desouza, K.C. (Ed.), Agile Information Systems: Conceptualization, Construction, and Management. Butterworth-Heinemann, Newton, MA, pp. 1-15
- Tallon, P. P. (2008). Inside the adaptive enterprise: an information technology capabilities perspective on business process agility. Information Technology Management, 9, 21-36
- Mikalef, Patrick, and Adamantia Pateli. "Information technology-enabled dynamic capabilities and their indirect effect on competitive performance: Findings from PLS-SEM and fsQCA." Journal of Business Research 70 (2017): 1-16.
- Yusuf, Y. Y., Gunasekaran, A., Musa, A., Dauda, M., El-Berishy, N. M. and Cang, S. (2012). A relational study of supply chain agility, competitiveness and business performance in the oil and gas industry. International Journal of Productio Economics, In press
- Fink, L., Neumann, S., 2007. Gaining agility through IT personnel capabilities: the mediating role of IT infrastructure capabilities. J. Assoc. Inf. Syst. 8 (8), 440-458.
- Gallagher, K.P., Worrell, J.L., 2008. Organizing IT to promote agility. Inf. Technol. Manage. 9 (1), 71-88.
- Chakravarty, A., Grewal, R., & Sambamurthy, V. (2013). Information technology competencies, organizational agility, and firm performance: Enabling and facilitating roles. Information Systems Research, 24(4), 976-997.
- Roja Sahu, Rajesh Kumar Sahoo, Shakti Ketan Prusty, Pratap Kumar Sahu. "Urinary Tract Infection and its Management." Systematic Reviews in Pharmacy 10.1 (2019), 42-48. Print. doi:10.5530/srp.2019.1.7
- Yang, G., Lucas, R., Caldwell, R., Yao, L., Romero, M., Caldwell, R. Novel mechanisms of endothelial dysfunction in diabetes (2010) Journal of Cardiovascular Disease Research, 1 (2), pp. 59-63. DOI: 10.4103/0975-3583.64432