Prioritizing and Evaluating the Dimensions of Agility of Human Resources in Small and Medium Companies of Tehran Province

Seyed Reza Seyed Javadin [1*], Seyed Ali Akbar Nilipoor Tabatabaie [2], Amir Ahmadi Zarandi [3]

[1] *Professor of University of Tehran, Faculty of Management, Tehran, Iran*
[2] *Associate Professor, Shakhes Pajouh Research Institute, Isfahan University, Isfahan, Iran*
[3] *Ph.D. Candidate, Shakhes Pajouh Research Institute, Isfahan University, Isfahan, Iran*

* CORRESPONDENCE: ✉ rjavadin@ut.ac.ir

ABSTRACT
Today, the agility of human resources is important given the importance of environmental changes and the perception that organizations should respond to these changes in a system-based framework. In this regard, the main goal of this research is prioritizing and evaluating the dimensions of agility of human resources. For this reason, the research community has been comprised of small and medium enterprises and experts in this field. In this research, 20 experts were selected as experts and 319 as managers and experts of companies as the sample of research. A semi-structured Delphi-fuzzy questionnaire was used to collect the research data in the field of identifying factors. In the prioritization section, the paired comparison questionnaire has been used. Finally, a hierarchical analysis method was used to identify the factors using the fuzzy Delphi method and to prioritize it. In the next section, factor analysis is used to examine the fit and validity of the final model. In the dimensions of speed components, agile infrastructure, mutual cooperation, culture of change, flexibility, integrity, and agile structure are identified.

Keywords: agility, human resources, fuzzy Delphi, hierarchical analysis

INTRODUCTION

Today, competition is regarded as one of the most important challenges for different managers. For this reason, managers are following to find strategies for their successful competition. One of the strategies is agility. Organizational agility is regarded as one of the concepts for increasing competitiveness (Kavoux, 2015). Agility word means rapid movement, ability, activity and ability to move as rapidly and is able to think as rapidly and intelligently (Ziyaee et al., 2012). Today, agility is one of the most important dimensions in organizational success as if some of researchers considered it as competitive advantages for winner organizations (Vagiey, 2016). At same time, during current decades, attention to human resources in the field of organizational agility was increased (Dabi & Gansakaran, 2015). This case is that human resource is regarded as most vital source of organization and it is so important to pay attention to it (Hermite et al., 2014). At same time, the factors like knowledge of staff, skill, ability and their insight are included (Bazpoura, 2004). In agility organizations, human resources are main efficiency factors. So that customers pay costs and it depends on persons who satisfy customer' needs with knowledge and technology (Goldeman et al., 1995). Now, it can be considered in small and medium companies as if the activity is based on performance of human resource.

RESEARCH METHODS

In millennium, small and medium firms emphasize upon agility if responding to customer, networking in world market, participation of staff and integration in model, capability of human resource and knowledge management (Zaree et al., 2015). Agility is the most prevalent and normal concept to manner of confrontation and entrust environment which describes production and management of organization with new strategy, thus, in order to obtain success in market as dynamic, it is necessary to change modern (Sharifee & Zhnag, 2001; Yousuf et al., 2004). Now, among different factors of organizational agility, human resource is as the highest and supreme capital and assets of organization and country and it is only capital which was not reduced with more consumption and developed. In fact, human capital is the most important assets of organization and innovation and creativity which include personal capability, skills and knowledge and experience of staff and managers. Human capital consists factors like knowledge, skill, ability and insights (Bazura, 2004)

According to studies, it shall state that small and medium companies assign 37% of total small and medium industries in Tehran province which this case emphasized important placement of Tehran in discussions on small and medium companies. Also, the companies assigned 42% of employment share in small and medium companies. One of the difficulties in small and medium companies is efficiency of human resource (Nader, 2011) which can be restored by human resource (Alhadid & Roman, 2015). As indicated, place of the case is recognized by high share of human resource in Tehran. At same time, Iranian industrial companies are following requests to human resources. As for statistics, till first semester of 2015, 30562 small and medium companies were performed in Tehran province. In this research has been done to prioritize and evaluate the dimensions of agility of human resources in Small and Medium Companies of Tehran Province.

Research Objectives

To prioritize effective dimensions of agility in Small and Medium Companies of Tehran Province

To evaluate status of effective dimensions in Small and Medium Companies of Tehran Province.

Research Questions

How do evaluate prioritization of effective dimensions on human resource in Small and Medium Companies of Tehran Province?

How do evaluate effective dimensions of human resource in Small and Medium Companies of Tehran Province?

Research Background

Antonios et al. (2015) performed research named a case study on business for agility project. The study was on travel planning, on line stores. In this article, a strategy based on solving problem was offered and also some of applied samples were shown by visual Microsoft 2013 to confront the challenge. The software allowed to confront hey partners who cannot face to face and indicated that there are powerful tools to respond challenges and limitations which virtual teams provided it. As result, project development is increased by more needs and this importance shall be obtained by quality of final product. From technical development, the software provides learning and independence. Of course, it delays attention to integration. And the evaluation allows to identify, progress, control the problems which delay in phase environment.

Sherhay and Karouski (2014) in research named discussion relationship between working organization and agility of workforce in small companies stated that agility and strategy management is effective in small production companies. The results can be conforming to optimization of business situation.

Hulbi et al. (2017) performed research named does knowledge management deliver knowledge management in small and medium companies? Showed that how simulation model can help small and medium producers to identify problems in current and future places and also help management to make decision as for strategies.

Tachi and Bordbar (2015) performed research named agility leadership and agility of human resource, and indicated that since researchers believed human resource shall be regarded as most important capital which play key role, thus, in this research, it was tried to discuss variation role of staff in Yazd university. The statistical society consists of all staff (regardless scientific board) who are selected as randomly sampling method. 115 persons were selected and the questionnaire was distributed among them. In order to analyze

data, structural equations model was used. The results showed that there is positive and significant relationship between leadership and agility of human resource, in other side, leadership can increase agility of human resource.

Abbaspour et al. (2014) conducted research titled determination of role of agility of human resource in strategic agility development (case study: Ansar Bank). In terms of purpose, the current research makes use of the concept of applied research and in terms of method, the research is a descriptive – survey research. The statistical population of the research includes all employees of Ansar Bank. Due to the limited population is 5240 peoples were evaluated according to calculations using the Cochran formula. And by using the Cochran formula the sample size is 610 people. The sampling method was multistep clustering method. In order to collect data, agility questionnaire of human resource (2008) and Mavenger' strategic agility was used. In order to reliability of questionnaire, confirmatory factorial analysis was used. Factorial analysis indicators showed that the questionnaires have good estimators. The validity of questionnaire was used by alpha Cronbach for agility of human resource 0/875 and strategic agility 0/879). The data was analyzed by structural equations modelling. The findings showed that agility of human resource and its dimensions have direct and significant effect on strategic agility. The results indicated that necessity of good responding to challenges is to provide agility of human resource to develop strategic agility.

Ziyaei et al. (2012) performed research named determination of development model of personal capability for human capital by agility of small and medium firms (case study: companies located in Science and Technology park of Tehran University). In this research, one discuses background and explorative interview with experts and hypothesis was offered for managers. In order to analyze data, factorial analysis method and structural equations modelling by using SPSS, LISREL were used. As result, one can say that development of personal capability is resulted to agility of human capital and agility of small and medium companies and also, it was indicated that entrepreneurship, knowledge, human stimulation and agility shall have developed. And they are the most important factors for agility of human capital and flexibility, speed and responding.

Aghamohammadi (2011) in research named effective factors in agility of military organizations with insight to future threats, discussed agility indicators, specifications of agility organizations in the field of human force and information technology to 8 cases in world armies. The conceptual sample was performed in terms of study and its parts were sent by a questionnaire with 71 questions. The type of research was field case for 552 persons who were selected by classification randomly method as 174 persons. Also, 15 military experts have been discussed. The findings show that by future threats, 7 subsets of agility including military technology, knowledge production, organizational flexibility, type of organization, systems and methods, strategic insight and preparation of human force and 9 factors for agility including perfect and on time reaction, mental and bodily preparation, continuation of logistics, comprehensiveness, professional preparation, supply and protect, on time responding, speed are as effective factors on agility of military forces.

Adibifard and Vazifehdoost (2009) in their research named strategy relation of agility, agile organization and work forces in emergency unit of Tehran medical sciences university found that there is basic relationship between agility strategy and agility. Also, agility which is with management educations influence on work and performance indicators. Labor agility has significant effect on agility of work force.

FINDINGS

Conceptual Model of Research

Agility dimensions of human resource are flexibility, responding, culture inertia, speed, integration and low complexity and interactive cooperation.
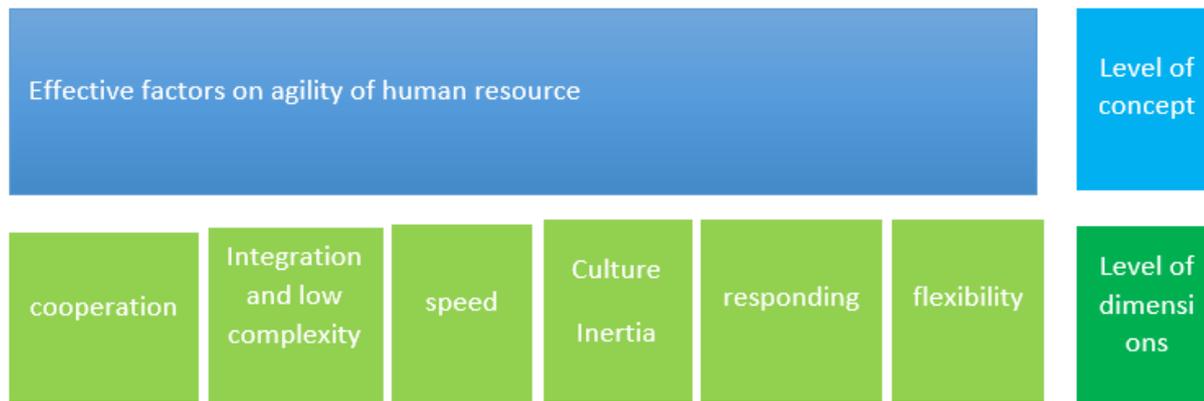
Figure 1. Conceptual model of research

Table 1. Pair comparison for dimensions

Indicators	Flexibility	Responding	Change	Speed	Integration	Cooperation	Agility structure	Agility infrastructure
Flexibility	1							
Responding	4.16	1						
Change	2.87	3.54	1					
Speed	4.2	3.42	4.25	1				
Integration	3.4	4.2	7.2	3.4	1			
Cooperation	2.2	2.2	3.3	4.34	2.54	1		
Agility structure	2.8	3.4	2.6	3.5	4.5	3.6	1	
Agility infrastructure	5.2	3.6	5.5	3.3	2.2	5.9	3.45	1
Incompatibility coefficient				0.07				

Statistical Population

The statistical population consists of two classes. In identification mode, active experts are used who are in management unit of Ministry of Cooperation, labor and social welfare and ministry of industry and mine and activists in private sections who are 20 persons (having more than 10 years' background and familiar with academic and operational and strategic positions and prioritize managers of small and medium companies in Tehran, total persons are 30562.

Methodology, Sample Size and Sampling Method

In expert section, as for limitation of persons, consensus method has been used and in determination and prioritization, classes sampling was used and Cochran formula was been used to determine sample of volume. As for research society, sample of volume was determined as 379 persons and after distribution of questionnaire, 319 questionnaires were returned.

Research Findings

To prioritize dimensions

Firstly, pair comparison of indicators was compared and the table for pair comparison was offered.

Investigating the status of indicators in Small and Medium companies by average test of a society

For investigating the status of indicators for current research in Small and Medium companies by using the test of mean was used. The results of this analyzing are shown in **Table 2**.

Table 2. Status of indicators

Factors	T value	Freedom degree	Sig. level	Average	Status
Flexibility	5/143	310	0.000	3/29	High average
Responding	-4/29	310	0.000	1/06	Low average
Culture inertia	6/55	310	0.000	3/3	High average
Speed	6/55	310	0.000	3/3	High average
Integration	3.12	310	0.000	3.5	High average
Cooperation	2.15	310	0.000	3.9	High average
Agile structure	-3.59	310	0.000	2.45	Low average
Agile infrastructure	3.25	310	0.000	4.32	High average

Table 3. Factors identified from fuzzy Delphi

Dimensions		
Dimensions level		
Flexibility	Agile structure	Integration
Responding	Agile structure	Cooperation
Culture inertia	Speed	

DISCUSSIONS AND CONCLUSION

Results of identification and clustering the effective factors on agility of human resource in companies:

In order to identify the effective factors of agility human resource, fuzzy Delphi method has been used. Questionnaire of fuzzy Delphi was offered to experts three times and phase average was evaluated in previous step. The results identify the factors which are on **Table 3**.

At sum, structural model was offered in following table.
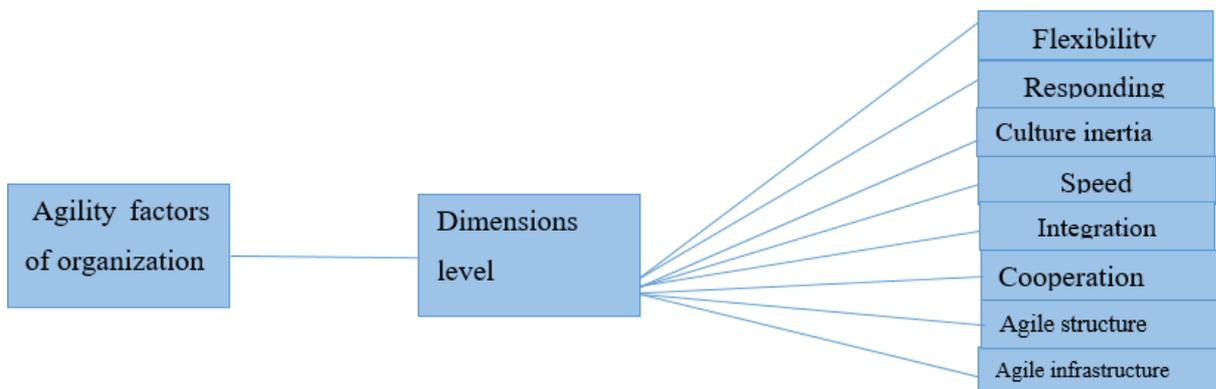
Results of Prioritization of Dimensions

Prioritize main dimension

Firstly, according to pair comparison questionnaire, the indicators were compared. In discussion results, it was recognized that importance of indicators are as 0.34 for speed, infrastructure 012, cooperation 0.113, culture 0.11, flexibility 0.108, integration 0.102, agile structure 0.012 have the highest and lowest importance.

Results of Situation of Indicators

Discuss situation of indicators by using average test of a society

For investigating the status of indicators of this study in Small and Medium companies by average test of a society was used. The results were shown that:

On discussion status of flexibility, since significant level is calculated as 6.14 and this value is positive too, thus, status of indicator is evaluated high average from the respondent's point of view.

On discussion status of responding, since significant level is calculated as 4.29 and this value is negative, thus, status of this indicator is evaluated low average from the respondent's point of view.

In investigating the status of culture inertia, since significant level is calculated as 6.55 and this value is positive, thus, status of this indicator is evaluated high from the respondent's point of view

In investigating the status of speed, since significant level is calculated as 3.32 and this value is positive, thus, status of this indicator is evaluated high average from the respondent's point of view

In investigating the status of Integration, since significant level is calculated as 3.52 and this value is positive, thus, status of this indicator is evaluated high average from the respondent's point of view

In investigating the status of Cooperation, since significant level is calculated as 3.92 and this value is positive, thus, status of this indicator is evaluated high average from the respondent's point of view

In investigating the status of Agile structure, since significant level is calculated as 3.59 and this value is negative, thus, status of this indicator is evaluated low average from the respondent's point of view

In investigating the status of Agile infrastructure, since significant level is calculated as 3.92 and this value is positive, thus, status of this indicator is evaluated high average from the respondent's point of view

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Seyed Reza Seyed Javadin – Professor of Tehran University, Faculty of Management, Tehran, Iran.

Seyed Aliakbar Nilipour Tabatabaee – Associate Professor, Shakhes Pajouh Research Institute, Isfahan University, Isfahan, Iran.

Amir Ahmadi Zarandi – Ph.D. Candidate, Shakhes Pajouh Research Institute, Isfahan University, Isfahan, Iran.

REFERENCES

Abbaspour, A., Mirkamali, S. M., Amiri, H., Moradi, R., & Keyvan (2014). Determine role of agility of human resource in development of agility (case study: Bank Ansar). *Monetary and financial development, 2*(4), 1-24.

Adibifard, S., & Vazifehdoost, H. (2009). Relation of strategy of agility, agile organization and agile work in emergency of Tehran medical sciences university. *Health system magazine, 2*(2), 59-66.

Aghmoahmaadi, D. (2011). Effective factors on agility of military organization by insight on future threats. *Strategic defense study, 2011*(44).

Altman, E. I., & Sabato, G. (2007). Modeling credit risk for SMEs: evidence from the U.S. market. *Abacus, 43*(3), 332-357. https://doi.org/10.1111/j.1467-6281.2007.00234.x

Antunes, B., Santos, D., Lopes, E., Fidalgo, F., & Alves, P. (2015). Blisstrail: an agile project business case study. *Procedia Computer Science, 64*(2015), 529–536. https://doi.org/10.1016/j.procs.2015.08.558

Ardalan, R. (2015). *Necessities of promotion of human resource for dynamism and agility of affairs, 17*(816), 6.

Asian Productivity Organization. (2011). *APO Productivity Data Book*. Japan: Keio University Press Incorporation.

Balaji, M., Velmurugan, V., Sivabalan, G., Ilayaraja, V. S., Prapa, M., & Mythily, V. (2014). ASCTM Approach for Enterprise Agility. *Procedia Engineering, 97*(2014), 2222–2231. https://doi.org/10.1016/j.proeng.2014.12.466

Balakrishnan, J. (2016). Design of a Framework to Implement Agility at Organizational Level. *Emerging Innovations in Agile Software Development*, 127. https://doi.org/10.4018/978-1-4666-9858-1.ch007

Breu, K., Hemingway, C. J., Strathern, M., & Bridger, D. (2002). Workforce agility: the new employee strategy for the knowledge economiy. *Journal of Information Technology*, 21-31. https://doi.org/10.1080/02683960110132070

Cockburn, A., & Highsmith, J. (2001). Agile Software Development 2: The People Factor. *Computer, 34*(11), 131-133. https://doi.org/10.1109/2.963450

Constantinescu, C. L., Matarazzo, D., Dienes, D., Francalanzac, E., & Bayer, M. (2014). Modeling of system knowledge for efficient agile manufacturing: Tool evaluation, selection and implementation scenario in SMEs. *Procedia CIRP, 25*(2014), 246–252. https://doi.org/10.1016/j.procir.2014.10.035

Crawford, B., León de la Barra, C., & Letelier, P. (2008). Communication and Creative Thinking in Agile Software Development. *International Federation for Information Processing, 277; Computer-Aided Innovation (CAI)*; Gaetano Cascini; (Boston: Springer), pp. 205–216. https://doi.org/10.1007/978-0-387-09697-1_17

Crocitto, M., & Youssef, M. (2003). The human side Organizational agility. *Industrial Management & Data Systems, 103*(6), 388-397. https://doi.org/10.1108/02635570310479963

Damaskopoulos, P., & Evgeniou, T. (2003). Adoption of New Economy Practices by SMEs in Eastern Europe. *European Management Journal, 21*(2), 777-718. https://doi.org/10.1016/S0263-2373(03)00009-4

Edvardsson, I. R., & Durst, S. (2013). Does knowledge management deliver the goods in SMEs? *Business and Management Research, 2*(2), 52-60. https://doi.org/10.5430/bmr.v2n2p52

Emine, D. (2012). Financial challenges that impede increasing the productivity of SMEs in Arab region. *Journal of Contemporary Management, 1*, 17-32.

Farsijani, H., Kasaee, M., Reza, H. Z. M., & Sabeti, M. (2016). Organization Agility Model in Marine Transportation Industry in Iran. *International Business Management, 10*(6), 1098-1105.

Fathizadeh, A., Ahmadi, S., Sadeghi, J., Daryabeig, M., & Taherkhani, L. (2012). A study on the relationship between organizational structure and organizational agility: A case study of insurance firm. *Management Science Letters, 2*(8), 2777-2788. https://doi.org/10.5267/j.msl.2012.10.010

Harvey, C., Koubek, R., & Chin, L. (1999). Toward a model of workforce agility. *International Journal of Agile Manufacturing*.

Hekler, E. B., Klasnja, P., Riley, W. T., Buman, M. P., Huberty, J., Rivera, D. E., & Martin, C. A. (2016). Agile science: creating useful products for behavior change in the real world. *Practice And Public Health Policy*, 1-12. https://doi.org/10.1007/s13142-016-0395-7

Khosravai, A., Abtahi, S., & Reza, S. H. (2012). Identify empowering factors for agility of human resource by Delphi method in electronics industries. *Management restoration, 6*(4), 153-129.

Mirsepasi, N., & Farshji, S. (2012). agility of banks and provide instrument for estimating organizational agility in Iranian governmental banks (estimation of Iran Saderat Bank). *Management researches magazine*, (96), autumn 2012.

Moradi, K. (2014). Discuss relation between human capital and organizational agility in high school of Tehran. *Leadership and educational management magazine*, (1), 168-143.

Nafei, W. A. (2016). Organizational Agility: The Key to Improve Organizational Performance. *International Business Research, 9*(3), 97. https://doi.org/10.5539/ibr.v9n3p97

Nowotarski, P., & Paslawski, J. (2015). Barriers in running construction SME – case study on introduction of agile methodology to electrical subcontractor. *Procedia Engineering, 122*(2015), 47–56. https://doi.org/10.1016/j.proeng.2015.10.006

Oloruntoba, R., & Kovács, G. (2015). A commentary on agility in humanitarian aid supply chains. *Supply Chain Management: An International Journal, 20*(6), 708–716. https://doi.org/10.1108/SCM-06-2015-0244

Panday, V. M. (2012). Comparative analysis of development of SMEs in developed and developing countries. *Proceedings of the 2012 International Conference on Business and Management* (pp. 426-433). Phuket-Thailand: CAAL- International Education.

Pasanenn, M. (2003). Multiple entrepreneurship among successful SMEs in peripheral locations. *Journal of Small Business and Enterprise Development, 10*(4) https://doi.org/10.1108/14626000310504729

Pederzoli, C., & Torricelli, C. (2010). A parsimonious default prediction model for Italian SMEs. *Banks and Bank Systems, 5*(4), 5-9.

Pollack, J., & Adler, D. (2016). Skills that improve profitability: The relationship between project management, IT skills, and small to medium enterprise profitability. *International Journal of Project Management, 34*(5), 831-838. https://doi.org/10.1016/j.ijproman.2016.03.004

Rezaee, M., & Rezaee, S. (2015), strategies of knowledge management and agility in Press industry. *Ketab-e-Mehr, 5*(16), 38-53.

Rigby, D., Sutherland, J., & Takeuchi, H. (2016). *Embracing Agile, Harvard Bussiness Review*.

Robbins, T. L., Crino, M. D., & Fredendall, L. D. (2002). An integrative model of the empowerment process. *Human Resource management, 12*(1), 419-443. https://doi.org/10.1016/S1053-4822(02)00068-2

Shugji Mehzadeh, T., & Mortazavi, S. M. (2013). Intermediate effect of organizational culture between leadership styles and creativity of staff (case study: Modarres Hospital of Saveh). *Efficiency management, 7*(26), 124-193.

Soltani, M., Shahmandi, E., & Marvi, N. (2014), offer agile mode for human resource and crisis management, 1st national conference on accounting and auditing. *Jami higher educational institute.*

Srivastava, A. P., & Dhar, R. L. (2016). Impact of Leader member exchange, human resource management practices and psychological empowerment on extra role performances: the mediating role of organisational commitment. *International Journal of Productivity and Performance Management, 65*(3). https://doi.org/10.1108/IJPPM-01-2014-0009

Taji, Z., & Bordbar, G. (2015). Discuss relationship between leadership and agility of human resource. *Human resource management research of Imam Hossein University, 7*(2), 153-177.

Wageeh, N. A. (2016). Organizational Agility: The Key to Organizational Success. *International Journal of Business and Management, 11*(5), 296. https://doi.org/10.5539/ijbm.v11n5p296

Yauch, C. A. (2011). Measuring agility as a performance outcome. *Journal of Manufacturing Technology Management, 22*(3), 384-404. https://doi.org/10.1108/17410381111112738

Zahedi, S., Khosrabi, A., Yarahmad, M., & Ahmadi, R. (2013). Discuss dimensions and indicators for agility of human resource. *Organizational studies magazine, 1*(4), 1-24.

Zaraei, Y., Beiranvand, M. S., & Shojaei, A. (2015). Study the Effect Of Human Capital On Organizational Agility Regarding To Mediator Role Of Organizational Intelligence.

Zhang, Z., & Sharifi, H. (2000). A Methodology for Achieving Agility in Manufacturing Organizations. *International Journal of Operations & Production Management, 20*(4), 496-512. https://doi.org/10.1108/01443570010314818

Ziyaee, M., Hassangholipour, T., Abbaspour, A., & Yarahmadi, M. (2012). Determine development model of personal capability by agility of small and medium companies (case study on companies located at Tehran science and technology park). *General management researches, 5*(15), 27-44.

Zonooz, B. H., Farzam, V., Satarifar, M., & Bakhshi, L. (2011). The relationship between knowledge transfer and competitiveness in SMEs with emphasis on absorptive capacity and combinative capabilities. *International Business and Management, 2*(1), 59-85.

∽∾