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THE MODEL OF WORKFORCE AGILITY DEPENDENT ON DRIVERS, STRATEGIES, PRACTICES, AND RESULTS

EL MODELO DE AGILIDAD DE LA FUERZA LABORAL DEPENDIENTE DE LOS CONDUCTORES, ESTRATEGIAS, PRÁCTICAS Y RESULTADOS

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ABSTRACT

For the time being, organizations throughout the world are in an environment that is constantly changing in various aspects including technological developments, customers' preferences, emerging markets, and globalization. In this environment, the concept of agility, especially workforce agility, is a valuable tool for organizations and can assist them considerably to cope with this situation. Given that a substantial number of scholars have studied the concept of agility from the technical point of view up until now, and have neglected the human resource aspect, this study has two aims: First, to, investigate the concept of workforce agility through a model incorporating drivers, practices, strategies advocating and stimulating the implementation of this concept while examining the relationships between these variables; and second, to determine the results of implementing a workforce agility system. The sample of the present study was selected from the staff and managers of the Ports and Maritime Organization of Iran, and namely those who had a bachelor's degree or higher and were working in the field of human resource management. Additionally, we used a questionnaire to evaluate the variable. According to the findings, except for the relationship between drivers and implementation results, all other relationships between drivers, practices, strategies, and results have been supported.

KEYWORDS

Agility, Workforce agility, Workforce agility drivers, Workforce agility strategies, Workforce agility practices, Workforce agility implementation results

RESUMEN

Por el momento, las organizaciones de todo el mundo se encuentran en un entorno que cambia constantemente en varios aspectos, incluidos los desarrollos tecnológicos, las preferencias de los clientes, los mercados emergentes y la globalización. En este entorno, el concepto de agilidad, especialmente la agilidad de la fuerza laboral, es una herramienta valiosa para las organizaciones y puede ayudarlas considerablemente a hacer frente a esta situación. Dado que un número sustancial de académicos han estudiado el concepto de agilidad desde el punto de vista técnico hasta ahora, y han descuidado el aspecto de recursos humanos, este estudio tiene como objetivo, en primer lugar, investigar el concepto de agilidad de la fuerza laboral a través de un modelo que incorpora impulsores, prácticas, estrategias que propugnan y estimulan la implementación de este concepto y examinan las relaciones entre estas variables y, en segundo lugar, determinan los resultados de la implementación del sistema de agilidad laboral. La muestra del presente estudio fue seleccionada entre el personal y los gerentes de la Organización de Puertos y Marítima de Irán, que tenían una licenciatura o un título superior y trabajaban en el campo de la gestión de recursos humanos. Además, utilizamos un cuestionario para

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evaluar la variable. Según los hallazgos, a excepción de la relación entre los impulsores y los resultados de la implementación, se han respaldado todas las demás relaciones entre los impulsores, las prácticas, las estrategias y los resultados.

PALABRAS CLAVE

Agilidad, agilidad de la fuerza laboral, impulsores de la agilidad de la fuerza laboral, estrategias de agilidad de la fuerza laboral, prácticas de agilidad de la fuerza laboral, resultados de implementación de la agilidad de la fuerza laboral

1. INTRODUCTION

Currently, organizations around the world are engaged in an environment where change is a key characteristic. Rapid technological progress, globalization, turbulent business models, novel and emerging markets, and ever-changing customer preferences are some of the daily challenges that most organizations ranging, from small to large, are currently coping with (Zitkiene & Deksnys, 2018). So far, various solutions such as reengineering, networking, virtual enterprises, modular corporations, high performing organizations, flexible manufacturing, and employee empowerment have been proposed, and that of “agility” has been proposed as one of them as well (Sherehiy et al., 2007). The challenges mentioned above force organizations to follow those rules which make them more efficient and agile in order to survive. In order to compete in the current turbulent market environment effectively, organizations should be proactive and be able to anticipate change. To do so, organizational structures should embrace more levels of agility through response and flexibility. Experts in the industry require novel organizational solutions, tools, and techniques to deal with environmental alterations, identify new opportunities, and be more adapted to external forces. In other words, an agile organization demands agile organizational enablers, drivers, abilities, strategies, and practices (Deksnys, 2018).

Organizational agility, that which is the capability of quickly responding to environmental changes through modifying products and services provided, is gradually becoming a critical issue to achieve and maintain a sustained competitive advantage in the fast-changing market (Singh et al., 2013; Zitkiene & Deksnys, 2018). One of the prerequisites of an agile organization is an agile workforce (Breu et al., 2002; Muduli, 2013). According to Virchez, (2015) the characteristics of agile organizations are grouped into five categories: strategic awareness (being aware of the external environment along with internal priorities) a reconfigurable organization (being able to easily redesign, rescale, realign and redeploy the processes, products, systems, work procedures, and even business models rapidly), organizational learning (the ability to identify an opportunity, transmitting that information, turning it into a viable and actionable strategy, testing it, learning from the test and finally deciding whether to develop or ignore it), flawless execution (having the ability of both integrating processes and balancing performance in different time frames) and an agile workforce (organizations that count on the capacities of their employees

to deliver special skills at any time). In a research of workforce agility, Beatty (2005) concluded that considering agile workforce management in an organization enables it to acquire their targets through innovation, increases the strategic capacities, and curbs the workforce-related structural costs.

Organizational agility is one of the most fundamental issues of human resource management throughout the world as the changes in both workplace and the demand and supply of workforce should be considered in human resource strategies. The issue of workforce agility in Latin America could be also be an intriguing issue for most of the organizations in the region given such problems as: recruiting women in companies, increasing rates of unemployment in some countries of Latin America and the impact of recruiting highly skilled employees in the labor market. On the other hand, the history of Latin America has been identified by characteristics including oscillating rates of economic growth, inadequate development of human capital and notable rates of income inequality. However, as the decade of growth which stemmed from high commodity prices ends, countries in Latin America are now aware that they must take into consideration the challenge of productivity improvement as a reliable source of equitable and sustainable long-term growth, as this requires coping with the forthcoming challenges of skills development throughout the area (Fiszbein et al., 2016). Accordingly, identifying the procedures of human resource agility and paying attention to aspects of pertinent drivers could empower and be beneficial to Latin American companies and thus achieving their goals.

Having reviewed the importance of workforce agility in organizations and given the dearth of systematic studies considering its essence and concept, (A. Gunasekaran, 1999; Sherehiy & Karwowski, 2014) it has been noted that up until now the majority of the research has underlined the importance of agility from technical points of view (Sherehiy & Karwowski, 2014). Given that studying specific human resource activities that would support the development of workforce agility have been neglected throughout the literature, this paper aims to study the mechanism of implementing workforce agility through a model incorporating drivers, strategies, and practices required for generating results derived from its implementation. Moreover, the effects of these elements (drivers, strategies, practices, and results) on each other are also assessed.

2. LITERATURE REVIEW

2.1. Workforce agility frameworks

Multiple frameworks have been suggested to classify the features of an agile workforce. A set of characteristics, such as behaviors, capabilities, competencies, attributes, and mindsets bring about the creation of a workforce agility concept (Breu et al., 2002; McCann & Selsky, 2012; Muduli, 2013; Shafer et al., 2001). Table 1 demonstrates a summary of frameworks providing the characteristics of the agile workforce.

Table 1. Frameworks in the literature pertaining to workforce agility

Features of an agile workforce	Classification	Conducted by
Generative Proactive Adaptive	Behaviors and mindsets	(Dyer & Shafer, 2003)
Adaptive Business-driven Generative Focused Values-driven	Competencies	(Dyer & Shafer, 1998)
Resilient Business-driven Focused Values-driven Generative	Competencies	(Shafer et al., 2001)
Infrastructure for the quick introduction of new information systems The advocacy of Information technology Employee empowerment for making the decision independently Availability of moving between projects Effectiveness of cooperating across functional boundaries Showing tendency to changing customer requirements Responsiveness to changing market conditions Speed of developing novel skills, abilities, and competencies Speed of acquiring the skills necessary for business process change Speed of innovating management skills Speed of getting new information technology and software skills	Capabilities	(Breu et al., 2002)
Adaptability Resiliency Proactivity	Capabilities	(Sherehiy et al., 2007)

Features of an agile workforce	Classification	Conducted by
Being aware	Capabilities	(McCann & Selsky, 2012)
Being networked		
Being goal-oriented		
Being action-oriented		
Being resourceful		
Flexible	Attributes	(Muduli, 2013)
Developmental		
Speedy		
Qualified		
Collaborative		
Informative		
Adaptive		

2.2. Categories of organizational agility

The categorization of organizational agility consists of agility drivers, capabilities, and enablers. Agility drivers or the reason or catalyst for agility (Sharifi & Zhang, 2001; Yusuf et al., 1999) are the external environmental changes impacting internal organizational components and processes and putting organizations in a vulnerable condition that may have never experienced before, and necessitating looking for competitive advantages (Deksnyš, 2018; Walter, 2020). The main categories for agility drivers are based on their sources. External or internal changes open up an organization for vulnerabilities or opportunities, depending on how prepared an organization is for a change. If the organization is not able to adapt to changes, has rigid structure and processes, does not have sufficiently trained employees, or lacks change capability altogether, it is exposed to competitive forces and often falls behind companies which are more agile and adaptable. However, if the organization is ready for change, has flexible structure and processes, highly trained employees, and the right culture, these market changes become opportunities to strengthen its competitive position and gain market share. Based on the literature analysis, we have identified different influences and sources for change (both internal and external) that are depicted in Table 2. Specific abilities providing the needed power and qualifications to respond to changes, require agility capabilities including responsiveness, flexibility, competency, and speed, as they provide pivotal roles. Zhang & Sharifi, (2000) defined agility capabilities as “essential capabilities that the company needs to positively respond to and take as ‘vital abilities that would provide the required strength to make appropriate responses to changes taking place in its business.’” Some scholars consider agility attributes as a synonym for agility capabilities (Bottani, 2009; Nejatian et al., 2018). The last category is agility enablers

determining the methods, practices, tools (Sharifi & Zhang, 1999), and essential technologies facilitating organizational agility implementation (A. Gunasekaran, 1998; B.-W. Lin, 2004; Oosterhout et al., 2006). Additionally, enablers play the role of leverage at different organizational levels (Sharifi & Zhang, 1999) and prepare an infrastructure for agility capabilities to be realized (Sharifi & Zhang, 2001). Lastly, agility enablers are also described as agility providers or agility practices in the literature (Bessant et al., 2000; C.-T. Lin et al., 2006; Vázquez-Bustelo et al., 2007; Zhengwen Zhang & Sharifi, 2007).

Table 2. Agility drivers Source: (Walter, 2020)

Source	Reason for change
External	Changes in market
	Faster delivery time
	Increased speed of innovations
	Changes in customer requirements
	Environmental pressures
	Changes in the business network
	Technology-related innovations and changes
	Political/legal changes and pressures
	Stricter financial obligations
	Broader product changes
	Changes in the social contract
	Intense competitive environment
	Shorter product lifecycle
	Outsourcing and dependence on suppliers
	Lower prices/costs
	Globalization
	Advancements in the scope of IT
	Customization and individualized products
	Higher quality demands
	More demand for IT/IS safety measures
Shorter time to market	
External	Production variables' changes
	Expectations of workforce/workplace
	Sustainable improvement strategy
	Social factors
	Internal complexity

2.3. Human Resource Strategies and Activities Related to Workforce Agility

Since each organization has its own unique and specific characteristics and experiences a stream of changes, defining a special set of activities that are applicable to develop an agile workforce is an arduous process (Dyer & Shafer, 1998). Thus far, researchers have identified various activities which include: incorporating training and development, staffing, information-sharing practices, work design, rewards and promotion regulations, work structure, performance management and power-sharing practices, supporting the guidance of agile workforce development (Dyer & Shafer, 1998; Muduli, 2013; Sumukadas & Sawhney, 2004). Table 3 depicts the research from the literature introducing various activities, practices, strategies, enablers, and capabilities for developing the agile workforce preparation program.

2.4. Impact of workforce agility on organizational performance

Agile organizations are constantly attempting to protect and enhance their competitive position (Bottani, 2009; Angappa Gunasekaran et al., 2018) in various ways which encompass producing high-quality products rapidly at reduced costs, (Bottani, 2009; Cheng et al., 2000; Angappa Gunasekaran et al., 2018; Meade & Sarkis, 1999), customer satisfaction, (Cao & Dowlatshahi, 2005; C.-T. Lin et al., 2006) workforce satisfaction, (C.-T. Lin et al., 2006) improved capability of producing new products, (Sharifi & Zhang, 2001) and removing valueless processes (C.-T. Lin et al., 2006). As such, organizational agility provides other advantages for organizations including increased performance, profitability and an increment in market share as well as environmental objectives (Chakravarty et al., 2013; C.-T. Lin et al., 2006; Narasimhan et al., 2006; Vázquez-Bustelo et al., 2007; Wang et al., 2014). So far, several studies have acknowledged that organizational agility has a positive impact on firm performance (Hazen et al., 2017; Inman et al., 2011; Vickery et al., 2010; Wang et al., 2014; Yusuf & Adeleye, 2002). For example, Vázquez-Bustelo et al. (2007) concluded that a higher level of organizational agility implementation has a positive impact on financial, operational, and market performance through improving the strength of manufacturing.

Therefore, based on the theoretical studies and discussions reviewed above, the hypotheses of this study are provided as follows:

H₁: Workforce agility drivers have an impact on workforce agility practices

H₂: Workforce agility practices have an impact on workforce agility results and performances

H₃: Workforce agility drivers have an impact on workforce agility strategies

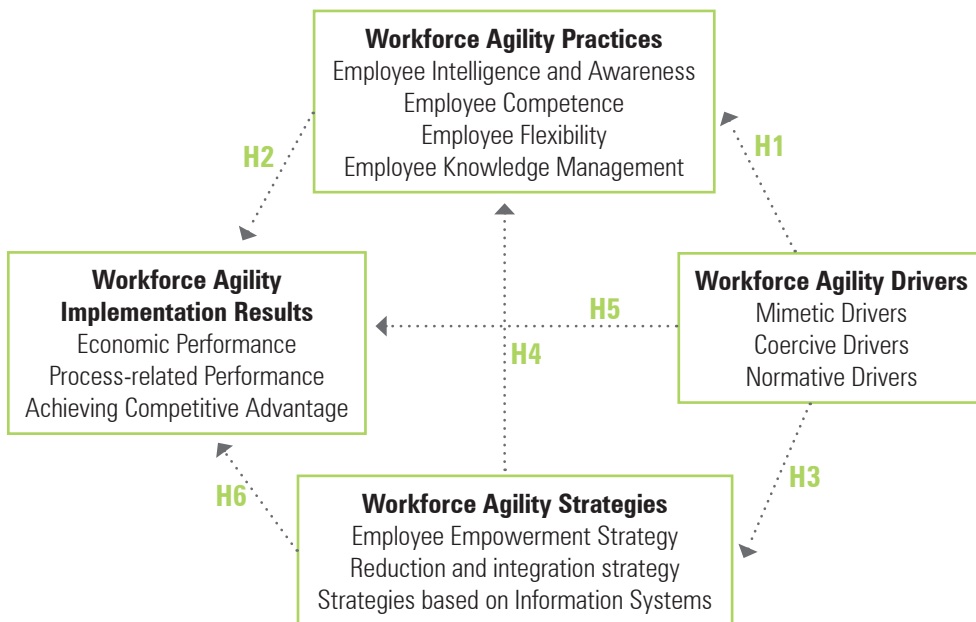
H₄: Workforce agility strategies have an impact on workforce agility practices

H₅: Workforce agility drivers have an impact on workforce agility results and performances

H₆: Workforce agility strategies have an impact on workforce agility results and performances

In addition, according to the discussions above, the conceptual model of this study is demonstrated as the following (Figure 1).

Figure 1. The Conceptual Model



3. RESEARCH METHOD

3.1. Sample and procedure

The statistical population of the present study is the staff and managers of the Ports and Maritime Organization of the Islamic Republic of Iran, having a bachelor's degree or higher and are working in the field of human resource management. These people had the necessary knowledge in the field of human resource agility and were fully acquainted with the process of human resource agility. The sample selected in this study was 300 people, and they were randomly selected from ten different

provinces in the country, meaning that the share of each province was estimated at 30 people. In the sample, 80 were males and 20 were females. Also, 45% of the selected sample were employees and 55% were senior and middle managers. Moreover, given that the main concept of this study is workforce agility, external environment has been determined as the driver in the conceptual model. Accordingly, the notion of agile work environments has been considered in all variables of this research, demonstrating that in this study the organizational agility and environmental variables have been regarded coherently in all processes of the research. On the other hand, we distributed the questionnaires among the respondents who were familiar with the concepts of agility and agile work environments, and had been appropriately taught with respect to human resource agility.

3.2. Measurement

In this study, we used a questionnaire (based on the 5-value Likert scale) to measure the variables. The concepts in this questionnaire are according to the previous studies. For measuring the Workforce Agility drivers three concepts of Coercive, Normative, and Mimetic where each concept incorporates four questions have been employed (Liu et al., 2010). Also, for measuring the Workforce Agility practices, four concepts of Employee Intelligence and Awareness, Employee Competence, Employee Flexibility, and Employee Knowledge Management were considered, and again for each concept, four questions were taken into account (Muduli, 2013). Employee Empowerment Strategy, Reduction, and integration strategy, and Strategies based on Information Systems concepts constitute the structure of the workforce agility strategies variable involving four questions for each concept (Sumukadas & Sawhney, 2004). Finally, for Workforce Agility, implementation results measurement we used were Economic Performance, Process-related Performance, and Achieving competitive advantage concepts (Hazen et al., 2017; Inman et al., 2011; Tallon & Pinsonneault, 2011; Vickery et al., 2010; Wang et al., 2014; Yusuf & Adeleye, 2002). Also, we used the Conformity Factor Analysis (CFA) and Cronbach's Alpha to evaluate the questionnaire, and the results of the analysis shown in Table 3 indicate that the questionnaire is sufficiently valid. Overall Fit Indices are also shown in Table 5. On the other hand, in this research, the Second Order Analysis was performed for each of the research variables, which according to Table 6, the measurement model of this research has sufficient validity.

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Table 3. Organizational practices, strategies, enablers, and capabilities for developing the agile workforce

Organizational workforce agility practices	Conducted by	Organizational workforce agility practices	Conducted by
Organizational learning and training / Reward systems/ Employee involvement/ Teamwork/ Information systems	(Muduli, 2017)	Front-line decision-making empowerment/ Cross-functional team sharing/ Modular integration of available technologies/ Delayed design specification/ Product succession planning/ Enterprise-wide integration of learning.	Gehani (2010)
Staffing (selecting; hiring, promoting, dismissing; adjusting)/ Training/Coordination / Collaboration/ Incentive/ Empowerment and involvement	(Qin & Nembhard, 2015) (Contreras et al., 2015)	Flexible working hours/ Organizing work, job rotation, flat organization structure/ Participation, cooperation, team working/ Well-being activities, leisure activities, occupational health/ Leading personnel, supervision Brainstorming, innovativeness, overall development, competences/ Interaction, atmosphere, organization citizenship behavior/ Remote work, different workplaces Opportunity to have both work and family/ Hiring new personnel/ Tools, materials, equipment	(Heilmann et al., 2020; Jin-Hai et al., 2003; Meredith & Francis, 2000; Sharp et al., 1999)

Organizational workforce agility practices	Conducted by	Organizational workforce agility practices	Conducted by
Selection/ Induction/ Organizational learning and training/ Performance management/ Promotion/ Rewards and Recognition	(Shafer et al., 2001)	Decentralization of decision-making/ Low formalization/ Flat structure	(Alavi et al., 2014)
Knowledgeable and skilled workforce/ Motivated people/ Flexible workforce/ Knowledgeable workers with skills in IT/ Multi-lingual/Empowered workers	(Yusuf et al., 1999) (Esfahani et al., 2017)	Top management support/ Skill and knowledge exploitation/ Open sharing of information/ Continuous communication/ Employee involvement/ Empowerment	(A. Gunasekaran, 1999; A. Gunasekaran & Yusuf, 2002; Şahin, 2000; Sharp et al., 1999; Z. Zhang & Sharifi, 2000)
Knowledgeable people/ Organizational flexibility/ Adaptable structure/ Multi-skilled people/ Decentralization of decision making	(Z. Zhang & Sharifi, 2000)	Job rotation/ Multifunctional workforce/ Job enrichment (responsibility on multiple tasks)	(A. Gunasekaran, 1999; Jin-Hai et al., 2003; Şahin, 2000)
Higher average skill levels/ Training and education/ Workforce skill upgrade/ Continuous training and development/ Cross-functional training	(A. Gunasekaran, 1999; A. Gunasekaran & Yusuf, 2002; Hormozi, 2001; Jin-Hai et al., 2003; Şahin, 2000; Z. Zhang & Sharifi, 2000)	Entrepreneurial firm culture	(Şahin, 2000)

Table 4. Measurement items, standardized CFA factor loadings, average variance extracted (AVE), and composite reliabilities.

Items	Loading	CR	AVE	Alpha	
Coercive drivers			0.748450822	0.527625	0.843
C01	0.7				
C02	0.69				
C03	0.62				
C04	0.6				
Normative drivers			0.828391252	0.55235	0.813
NO1	0.69				
NO2	0.58				
NO3	0.87				
NO4	0.8				
Mimetic drivers			0.757986031	0.5126	0.884
MI1	0.64				
MI2	0.79				
MI3	0.71				
Employee Empowerment Strategy			0.82496867	0.56005	0.843
ES1	0.61				
ES2	0.44				
ES3	0.92				
ES4	0.91				
Reduction and integration strategy			0.795599846	0.49645	0.813
RI1	0.68				
RI2	0.61				
RI3	0.83				
RI4	0.68				
Strategies based on Information Systems			0.910230258	0.72495	0.884
IT1	0.56				
IT2	0.85				
IT3	0.99				
IT4	0.94				

Items	Loading	CR	AVE	Alpha	
Employee Intelligence and Awareness			0.873213531	0.639825	0.843
EIA1	0.55				
EIA2	0.88				
EIA3	0.82				
EIA4	0.9				
Employee Competence			0.822202079	0.53905	0.813
EC1	0.69				
EC2	0.84				
EC3	0.76				
EC4	0.63				
Employee Flexibility			0.807965861	0.52075	0.884
FLE1	0.52				
FLE2	0.79				
FLE3	0.86				
FLE4	0.67				
Employee Knowledge Management			0.76691639	0.466425	0.816
KN1	0.66				
KN2	0.4				
KN3	0.85				
KN4	0.74				
Economic Performance			0.83004273	0.554525	0.843
EC1	0.68				
EC2	0.6				
EC3	0.86				
EC4	0.81				
Process-related Performance			0.679257795	0.359125	0.813
PR1	0.36				
PR2	0.75				
PR3	0.6				
PR4	0.62				

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Items	Loading	CR	AVE	Alpha
Achieving competitive advantage		0.682422152	0.3738	0.884
COM1	0.62			
COM2	0.88			
COM3	0.4			
COM4	0.42			

Table 5. Overall Fit Indices of the CFA model

Fit index	Scores	Recommended cut-off value
χ^2/df	2.65	<2 <5
GFI	0.84	>0.90 >0.80
RMSEA	0.07	<0.08 <0.1
CFI	0.92	>0.90

Table 6. Second-Order Measurement Factor

-	INT	PRA	EST	RES	AVE
INT	1				0.672733
PRA	0.442	1			0.726855
EST	0.385	0.56	1		0.866804
RES	0.408	0.753	0.63	1	0.774198

3.3. Structural model

After validating the measurement model, the structural model is used to test the hypotheses. In this study, two structural models were investigated by using PLS software and the results of this analysis are demonstrated in Table 6.

Table 7. Structural parameter estimates

Path	Hypotheses	Estimate	t-Value	Result
DRA->PRA	H1	0.266	4.2224	Supported
PRA->RES	H2	0.569	5.374	Supported
DRA->EST	H3	0.385	5.847	Supported
EST->PRA	H4	0.457	6.8884	Supported
DRA->RES	H5	0.043	0.9459	Not supported
EST->RES	H6	0.295	3.2038	Supported

Relying upon the results (Table 7), workforce agility drivers, impact on workforce agility practices demonstrating that H1 is confirmed. Also, H2 is supported meaning that workforce agility practices affect the workforce agility implementation results. In this study, we determined that workforce agility drivers, impact on workforce agility strategies, proving that H3 is admitted. While according to the results H4 is accepted, H5 is not supported. Finally, findings showed that H6 is accepted as well.

4. DISCUSSION AND CONCLUSION

In this paper, Human resource agility was considered as an effective topic in the organization and agility was also analyzed as a coherent and cohesive process. In the process of workforce agility, drivers, practices, strategies and results derived from the implementation were examined as the main concepts in agility. The results of this study showed that workforce agility drivers affect both workforce agility practices and strategies. In this case, it seems that Coercive, Mimetic and Normative drivers can lead to executive success and the realization of agile human resource management strategies. In order to improve the quality of workforce agility practices, attention to environmental drivers should be considered by organizations involved in this process. Paying attention to the performance of competitors and using their successful experiences in implementing the process of workforce agility through benchmarking, proper analysis and use of environmental drivers can be noteworthy tips to ameliorate the process of making the workforce agile. Moreover, in this study we found that practices and strategies of workforce agility affect the implementation results variable. Also, workforce agility strategies lead to the improvement of workforce agility practices. It seems that the formulation of strategies such as Staff empowerment, Reduction/integration and information technology-based strategies should be considered by managers in order to successfully implement agility processes. On the other hand, we found that in order to improve the performance and the implementation results of workforce agility, Employee intelligence and awareness, Employee competence, Employee flexibility and Employee knowledge management can be applicable tools. It is worth mentioning that these tools are most effective if they are considered within the framework of Staff empowerment,

Reduction/Integration and IT-based strategies. Furthermore, we have concluded that workforce agility drivers do not affect the implementation results and performance of workforce agility. This suggests that agility drivers cannot directly lead to the appropriate results and consequences derived from implementing the workforce agility process. Instead, these drivers can be truly effective when they improve the performance of considered strategies and practices that may positively impact the expected drivers on the performance of whole system. In general, according to the concluding findings, in order to achieve appropriate and agile performance in the field of human resources, agility should be considered as a continuous and interconnected process, and in this process, based on the appropriate analysis of environmental factors, agility strategies and practices should be created and institutionalized into the overall organization. In this case, it seems that the realization of the desired performance is not out of reach.

Furthermore, concepts such as price changes, changes in global policy and distribution of resources (such as petroleum and base metals) are some specific characteristics of emerging economies. Therefore, in order to manage international organizations properly, identifying these changes and adopting accurate strategies to convert environmental threats into opportunities could make such organizations leading and prosperous within their industry. Currently, of the effective strategies that could be applicable is organizational agility which has been evaluated from the aspects of drivers, strategies and implementation results in this study. For instance, workforce flexibility and workforce knowledge were considered as practices of making the workforce agile, while competitive advantage was introduced as one of the results of implementing workforce agility strategies and practices. Hence, given the challenges in emerging economies including weak and unstable market capacity, political instability and restrictions of foreign accessibility, the findings of this paper have generated some pathways for understanding the management of firms in emerging economies.

Also, we used the SEM method to reach the results. This method examines all variables and their relationships coherently and simultaneously, meaning that it is an adaptable method for analyzing the results within the conceptual study model. In addition, we employed the institutional theory for conducting the conceptual model, illustrating how external environmental pressure affects an organization. This theory demonstrates that social frameworks, values and norms affect the economic behavior of individuals and organizations. As such, we applied the drivers of workforce agility demonstrating the distinctive theoretical perspective of this study regarding the issue of workforce agility. Strategic Choice Theory shows that managers' discretion and the way in which they interpret environmental drivers have a considerable impact on their strategic decisions. Hence, Strategic Choice Theory is the basis of analyzing agility strategies in this research. As a result, all the points mentioned above indicated the methodological and theoretical contributions of this study.

Another point worth mentioning is that the data of this research were gathered before the Coronavirus pandemic. It seems that since the environmental conditions are the most important factors regarding the agility issue, this pandemic could have affected some results of this study, especially in the part of agility drivers in which Environmental changes can bring about legal, behavioral and social changes. However, investigating this question of: “how the Coronavirus might pandemic affect the concept of workforce agility,” may be the subject of future research.

4.1. Managerial implications

Even though numerous studies regarding the workforce agility issue have been conducted thus far, this study has been done in one of the government departments of Iran where results could be applied by managers in future management science studies in similar countries, especially countries in the Latin American region. Iran, like some Latin American countries, suffers from problems such as unemployment, lack of attention to labor laws and economic problems. Based on this fact, the results of this paper could be viable, attractive and beneficial for managers in Latin American countries. Also, since this paper has studied the issue of human resources agility as a process in which all concepts such as drivers, strategies and operational components have been considered, the results of this study can serve as a model for controlling human resource agility processes with a coherent approach. In addition, these research findings can be the basis for extracting an executive instruction in the field of human resource agility describing all the drivers, strategies and operational components separately.

REFERENCES:

- Alavi, S., Wahab, D. A., Muhamad, N., & Shirani, B. A. (2014). Organic structure and organisational learning as the main antecedents of workforce agility. *International Journal of Production Research*, 52(21), 6273–6295. <https://doi.org/10.1080/00207543.2014.919420>
- Beatty, R. W., University of Michigan, School of Business Administration, PricewaterhouseCoopers LLP, & Saratoga (Firm). (2005). *Workforce agility: The new frontier for competitive advantage*. PricewaterhouseCoopers. <http://www.pwc.com/us/eng/tax/hrs/saratoga/Workforce-Agility.pdf>
- Bessant, J., Francis, D., Meredith, S., Kaplinsky, R., & Brown, S. (2000). Developing manufacturing agility in SMEs. *International Journal of Manufacturing Technology and Management*, 2(1/2/3/4/5/6/7), 730. <https://doi.org/10.1504/IJMTM.2000.001374>
- Bottani, E. (2009). A fuzzy QFD approach to achieve agility. *International Journal of Production Economics*, 119(2), 380–391. <https://doi.org/10.1016/j.ijpe.2009.02.013>
- Breu, K., Hemingway, C. J., Strathern, M., & Bridger, D. (2002). Workforce agility: The new employee strategy for the knowledge economy. *Journal of Information Technology*, 17(1), 21–31. <https://doi.org/10.1080/02683960110132070>

- Cao, Q., & Dowlatshahi, S. (2005). The impact of alignment between virtual enterprise and information technology on business performance in an agile manufacturing environment. *Journal of Operations Management*, 23(5), 531–550. <https://doi.org/10.1016/j.jom.2004.10.010>
- 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. <https://doi.org/10.1287/isre.2013.0500>
- Cheng, K., Pan, P. Y., & Harrison, D. K. (2000). The Internet as a tool with application to agile manufacturing: A web-based engineering approach and its implementation issues. *International Journal of Production Research*, 38(12), 2743–2759. <https://doi.org/10.1080/002075400411466>
- Contreras, C. A. R., Almaguer, K. P. J., & Tovar, Y. S. (2015). Percepciones del impacto de la capacitación, compensación y selección del personal en la eficiencia de los proyectos. *AD-minister*, 27, 5–26. <https://doi.org/10.17230/ad-minister.27.1>
- Deksnyš, M. (2018). *Organizational Agility in High Growth Companies* [Thesis, Mykolas Romeris University]. <https://repository.mruni.eu/handle/007/15317>
- Dyer, L. D., & Shafer, R. A. (1998). *From Human Resource Strategy to Organizational Effectiveness: Lessons from Research on Organizational Agility*.
- Dyer, L., & Shafer, R. A. (2003). *Dynamic organizations: Achieving marketplace and organizational agility with people*. Center for Advanced Human Resource Studies, Cornell University.
- Esfahani, S. A., Rezaii, H., Koochmeshki, N., & Parsa, S. S. (2017). Sustainable and flexible human resource management for innovative organizations. *AD-Minister*, 30, 195–215. <https://doi.org/10.17230/ad-minister.30.10>
- Fiszbein, A., Cosentino, C., & Cumsille, B. (2016). *The skills development challenge in Latin America: Diagnosing the problems and identifying public policy solutions* (p. [76] p.). Inter-American Dialogue and Mathematica Policy Research. <https://www.mathematica-mpr.com/our-publications-and-findings/publications/the-skills-development-challenge-in-latin-america-diagnosing-the-problems-and-identifying-public>
- Gunasekaran, A. (1998). Agile manufacturing: Enablers and an implementation framework. *International Journal of Production Research*, 36(5), 1223–1247. <https://doi.org/10.1080/002075498193291>
- Gunasekaran, A., & Yusuf, Y. Y. (2002). Agile manufacturing: A taxonomy of strategic and technological imperatives. *International Journal of Production Research*, 40(6), 1357–1385. <https://doi.org/10.1080/00207540110118370>

- Gunasekaran, Angappa, Yusuf, Y. Y., Adeleye, E. O., & Papadopoulos, T. (2018). Agile manufacturing practices: The role of big data and business analytics with multiple case studies. *International Journal of Production Research*, 56(1–2), 385–397. <https://doi.org/10.1080/00207543.2017.1395488>
- Hazen, B. T., Bradley, R. V., Bell, J. E., In, J., & Byrd, T. A. (2017). Enterprise architecture: A competence-based approach to achieving agility and firm performance. *International Journal of Production Economics*, 193, 566–577. <https://doi.org/10.1016/j.ijpe.2017.08.022>
- Heilmann, P., Forsten-Astikainen, R., & Kultalahti, S. (2020). Agile HRM practices of SMEs. *Journal of Small Business Management*, 0(0), 1–16. <https://doi.org/10.1111/jsbm.12483>
- Hormozi, A. M. (2001). Agile manufacturing: The next logical step. *Benchmarking: An International Journal*, 8(2), 132–143. <https://doi.org/10.1108/14635770110389843>
- Inman, R. A., Sale, R. S., Green, K. W., & Whitten, D. (2011). Agile manufacturing: Relation to JIT, operational performance and firm performance. *Journal of Operations Management*, 29(4), 343–355. <https://doi.org/10.1016/j.jom.2010.06.001>
- Jin Hai, L., Anderson, A. R., & Harrison, R. T. (2003). The evolution of agile manufacturing. *Business Process Management Journal*, 9(2), 170–189. <https://doi.org/10.1108/14637150310468380>
- Lin, B.-W. (2004). Original equipment manufacturers (OEM) manufacturing strategy for network innovation agility: The case of Taiwanese manufacturing networks. *International Journal of Production Research*, 42(5), 943–957. <https://doi.org/10.1080/00207540310001622449>
- Lin, C.-T., Chiu, H., & Tseng, Y.-H. (2006). Agility evaluation using fuzzy logic. *International Journal of Production Economics*, 101(2), 353–368. <https://doi.org/10.1016/j.ijpe.2005.01.011>
- Liu, H., Ke, W., Wei, K. K., Gu, J., & Chen, H. (2010). The role of institutional pressures and organizational culture in the firm's intention to adopt internet-enabled supply chain management systems. *Journal of Operations Management*, 28(5), 372–384. <https://doi.org/10.1016/j.jom.2009.11.010>
- McCann, J., & Selsky, J. W. (2012). *Mastering Turbulence: The Essential Capabilities of Agile and Resilient Individuals, Teams and Organizations* (1 edition). Jossey-Bass.
- Meade, L. M., & Sarkis, J. (1999). Analyzing organizational project alternatives for agile manufacturing processes: An analytical network approach. *International Journal of Production Research*, 37(2), 241–261. <https://doi.org/10.1080/002075499191751>
- Meredith, S., & Francis, D. (2000). Journey towards agility: The agile wheel explored. *The TQM Magazine*, 12(2), 137–143. <https://doi.org/10.1108/09544780010318398>

- Muduli, A. (2013). Workforce agility: A review of literature. *The IUP Journal of Management Research : IJMR*, 12(3).
- Muduli, A. (2017). Workforce agility: Examining the role of organizational practices and psychological empowerment. *Global Business and Organizational Excellence*, 36(5), 46–56. <https://doi.org/10.1002/joe.21800>
- Narasimhan, R., Swink, M., & Kim, S. W. (2006). Disentangling leanness and agility: An empirical investigation. *Journal of Operations Management*, 24(5), 440–457. <https://doi.org/10.1016/j.jom.2005.11.011>
- Nejatian, M., Zarei, M. H., Nejati, M., & Zanjirchi, S. M. (2018). *A hybrid approach to achieve organizational agility: An empirical study of a food company*. Undefined. <https://www.semanticscholar.org/paper/A-hybrid-approach-to-achieve-organizational-An-of-a-Nejatian-Zarei/9c3902dd83b28a3f16d1eafa402edaba380e6379>
- Oosterhout, M. van, Waarts, E., & Hillegersberg, J. van. (2006). Change factors requiring agility and implications for IT. *European Journal of Information Systems*, 15(2), 132–145. <https://doi.org/10.1057/palgrave.ejis.3000601>
- Qin, R., & Nembhard, D. A. (2015). Workforce agility in operations management. *Surveys in Operations Research and Management Science*, 20(2), 55–69. <https://doi.org/10.1016/j.sorms.2015.11.001>
- Şahin, F. B. E. (2000). *Manufacturing competitiveness: Different systems to achieve the same results*. /paper/ Manufacturing-competitiveness%3A-Different-systems-to-%C5%9Eahin/461391529826729e6e57408fd6fcc964c8c4dc02
- Shafer, R. A., Dyer, L., Kilty, J., Amos, J., & Ericksen, J. (2001). Crafting a Human Resource Strategy to Foster Organizational Agility: A Case Study. *Human Resource Management*, 40(3), 197–211. <https://doi.org/10.1002/hrm.1011>
- Sharifi, H., & Zhang, Z. (1999). A methodology for achieving agility in manufacturing organisations: An introduction. *International Journal of Production Economics*, 62(1), 7–22. [https://doi.org/10.1016/S0925-5273\(98\)00217-5](https://doi.org/10.1016/S0925-5273(98)00217-5)
- Sharifi, H., & Zhang, Z. (2001). Agile manufacturing in practice □ Application of a methodology. *International Journal of Operations & Production Management*, 21(5/6), 772–794. <https://doi.org/10.1108/01443570110390462>
- Sharp, J. M., Irani, Z., & Desai, S. (1999). Working towards agile manufacturing in the UK industry. *International Journal of Production Economics*, 62(1), 155–169. [https://doi.org/10.1016/S0925-5273\(98\)00228-X](https://doi.org/10.1016/S0925-5273(98)00228-X)

- Sherehiy, B., & Karwowski, W. (2014). The relationship between work organization and workforce agility in small manufacturing enterprises. *International Journal of Industrial Ergonomics*, 44(3), 466–473. <https://doi.org/10.1016/j.ergon.2014.01.002>
- Sherehiy, B., Karwowski, W., & Layer, J. K. (2007). A review of enterprise agility: Concepts, frameworks, and attributes. *International Journal of Industrial Ergonomics*, 37(5), 445–460. <https://doi.org/10.1016/j.ergon.2007.01.007>
- Singh, J., Sharma, G., Hill, J., & Schnackenberg, A. (2013). Organizational agility: What it is, what it is not, and why it matters. *Academy of Management Proceedings*, 2013(1), 11813. <https://doi.org/10.5465/ambpp.2013.11813abstract>
- Sumukadas, N., Sawhney, R. (2004). Workforce agility through employee involvement. *IIE Transactions*, 36(10), 1011–1021. <https://doi.org/10.1080/07408170490500997>
- Tallon, P. P., & Pinsonneault, A. (2011). Competing Perspectives on the Link Between Strategic Information Technology Alignment and Organizational Agility: Insights from a Mediation Model. *MIS Quarterly*, 35(2), 463–486. JSTOR. <https://doi.org/10.2307/23044052>
- Vázquez-Bustelo, D., Avella, L., & Fernández, E. (2007). Agility drivers, enablers and outcomes: Empirical test of an integrated agile manufacturing model. *International Journal of Operations & Production Management*, 27(12), 1303–1332. <https://doi.org/10.1108/01443570710835633>
- Vickery, S. K., Droge, C., Setia, P., & Sambamurthy, V. (2010). Supply chain information technologies and organisational initiatives: Complementary versus independent effects on agility and firm performance. *International Journal of Production Research*, 48(23), 7025–7042. <https://doi.org/10.1080/00207540903348353>
- Virchez, A. (2015). A human resource perspective on the development of workforce agility. *Theses and Dissertations*. <https://digitalcommons.pepperdine.edu/etd/665>
- Walter, A.-T. (2020). Organizational agility: Ill-defined and somewhat confusing? A systematic literature review and conceptualization. *Management Review Quarterly*. <https://doi.org/10.1007/s11301-020-00186-6>
- Wang, Z., Pan, S. L., Ouyang, T. H., & Chou, T.-C. (2014). Achieving IT-Enabled Enterprise Agility in China: An IT Organizational Identity Perspective. *IEEE Transactions on Engineering Management*, 61(1), 182–195. <https://doi.org/10.1109/TEM.2013.2259494>
- Yusuf, Y. Y., & Adeleye, E. O. (2002). A comparative study of lean and agile manufacturing with a related survey of current practices in the UK. *International Journal of Production Research*, 40(17), 4545–4562. <https://doi.org/10.1080/00207540210157141>

- Yusuf, Y. Y., Sarhadi, M., & Gunasekaran, A. (1999). Agile manufacturing: The drivers, concepts and attributes. *International Journal of Production Economics*, 62(1), 33–43. [https://doi.org/10.1016/S0925-5273\(98\)00219-9](https://doi.org/10.1016/S0925-5273(98)00219-9)
- Zhang, Z., & Sharifi, H. (2000). A methodology for achieving agility in manufacturing organisations. *International Journal of Operations & Production Management*, 20(4), 496–513. <https://doi.org/10.1108/01443570010314818>
- Zhang, Zhengwen, & Sharifi, H. (2007). Towards Theory Building in Agile Manufacturing Strategy—A Taxonomical Approach. *IEEE Transactions on Engineering Management*, 54(2), 351–370. <https://doi.org/10.1109/TEM.2007.893989>
- Zitkiene, R., & Deksnys, M. (2018). Organizational Agility Conceptual Model. *Montenegrin Journal of Economics*, 14(2), 115–129.

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