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The Role of Organizational Flexibility in Organizational Agility: A Research on SMEs

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Abstract

Flexibility and agility, which are closely interrelated concepts with organizations' performance, have effects on managers' decisions. In this context, this study aims to determine the effect of organizational flexibility on organizational agility and agility abilities in small medium and large enterprises. Two questionnaires were used to get data. The data were collected from 111 managers from 46 firms located in the West of Turkey. Regression analysis was used to depict the relations. The results showed that there is a positive and significant impact of organizational structure flexibility on the organizational agility and agility abilities; competency, flexibility, responsiveness and speed.

Keywords: Organizational Flexibility, Organizational Agility, Speed, Responsiveness, Competency

JEL Codes: M1, M12, M54

1. Introduction

The question of why some companies die while others survive is still discussed by researchers. Survival is one of the basic goals for a manufacturing firm. Therefore,

throughout history, manufacturing firms have competed to survive in a dynamic environment. This competition continues to intensify in Industry 4.0, which includes many modern automation systems, data exchanges and production technologies. Industry 4.0 technology enables more efficient business models to gather and analyze any information needed for production. Today's high technology and speed environment changes create unpredictability and uncertainty in almost all companies, and force them to be more dynamic, to have more flexible and agile abilities. Moreover, firms need to use these abilities effectively. It has become inevitable for enterprises to change the organizational climate, organizational structure and become more flexible and agile organizations to keep up with technological innovations and to overcome competition. Flexibility plays a key role in organizations to sustain their entity in a turbulent and unpredictable environment. Organizational flexibility is one of the concepts related to organizational agility: organizational adaptability (a reactive aspect) and organizational flexibility (a proactive aspect) (Felipe et al., 2016: 4625). It is possible to adapt the resources and competencies of the enterprise to the changing environment and to have a flexible organization that allows the organizations to use tools such as organization, technology, human and innovation in interaction. By having agility abilities, an organization can adjust new initiatives or strategies that differ from the other actors in the industry to answer the market on time. These considerations and situations lead us to focus on organizational flexibility and agility. In other words, the main aim of this work is to determine the impact of the organizational flexibility level of the firms on the firms' organizational agility. For this purpose, an empirical study was carried out on the senior managers of 46 out of 128 medium and large enterprises in the 1st and 2nd Organized Industrial Zone in Sakarya, located in the West of Turkey. The outcomes of this research could be useful for managers to construct the organization structure and adapt their companies to the environment.

The research contains five sections: a literature section presenting a conceptual framework and reviewing on previous research to emphasize the model and hypotheses; subsequently, the purpose and hypothesis are described; the sample and measures are explained in the methodology section; after, the results are presented and interpreted; conclusions are discussed and implications are presented in the final section.

2. Review of Literature

In recent years, flexibility has attracted the attention of researchers and managers as an important role in today's competitive advantage. There are many reasons for this. The stability of the competitive environment in the 1960s and 1970s has already been replaced by quick increasing uncertainty and product life stages become shorter, customers' preferences change faster and competition is intensifying (Dreyer and Grønhaug, 2004: 484). Flexibility has different meanings for different disciplines in literature. In finance, it is the ability to avoid costly financial distress as well as underinvestment (Bonaimé et al., 2013:1074), in strategic management, it is the capability of a firm to respond advantageously to changing environment (Sanchez, 1995:135). In manufacturing, it refers to the ability of a

manufacturing system to respond cost-effectively and rapidly to changing production needs and requirements (Benjaafar and Ramakrishnan, 1996:1196). In marketing, it is defined as a firm's ability to respond quickly to changing market conditions (Matusik and Hill, 1998:682). Flexibility is also the ability of an organization to survive when negatively affected by changes in environmental conditions (Nemli, 1998: 79).

However, beyond the above definitions and rudimentary perception of the importance of flexibility, organizational flexibility is a new concept and researchers have still studied it. Organizational flexibility can be defined as firms being flexibility not only in a discipline or department but in all disciplines or departments. It is defined as the ability to respond to unpredicted change and the capacity to determine the level of firms may exercise in uncertain environments (Phillips and Wright, 2009: 1072).

Burns and Stalker (1961) stated that a mechanistic management system is appropriate to stable conditions, whereas an organismic form is appropriate to changing conditions. In other words, they claimed the utility of the notions of "mechanistic" and "organic" management systems reside mainly in their being related as dependent variables to the rate of the technological basis of production and the market dynamic situation. In mechanic organizational structure, authority and control are often centralized, and task standardization and specialization occur frequently. In contrast, in an organic organizational structure, a 'flatter' structure occurs. That is, the hierarchy consists of fewer levels, decision making is more frequently decentralized, and employees who are multifunctional, who work in systems where greater degrees of horizontal integration occur, are more widely found (Kalay and Lynn, 2016: 127). Typically, organic organizations produce outputs requiring the utilization of skilled personnel and what Perrow (1967) and others (Hickson et al. 1969) refer to as 'knowledge technology'. In contrast, mechanical organizations are best suited for mass production of the same item. The skill requirements are relatively low for mass-production operations, especially if assembly-lines mechanically prescribe the behavior of employees. The mechanical type of organization has the best opportunity for maximizing productivity while the organic type has the greatest potential for stimulating innovation (Hull and Hage, 1982: 565). Organic organizations are flexible and focus on rules less which facilitates innovation, allows less formality, greater clarity, and naturally promotes the development of more new ideas and behavior. (Wasti and Fiş, 2010: 14). The emphasis on these characteristics of organic organizations supports well qualified staff with knowledge and skills and supports teamwork with outside people and organizations, high horizontal communication and contribution to all areas of the organization, too.

Teece et al. (1997) have considered organizational flexibility as a combination of a repertoire of organizational and managerial capabilities that allow organizations to adapt quickly under such environmental shifts. Actually, we can say that the organic system is a system that is an overall systemic understanding of flexibility employed to maintain and adapt firms to the different changes linked with firms' strategies. More flexible and organic organizations that are equipped with better skills enable employees to demonstrate their creativity and different

abilities and they are able to overcome this dynamic by their skill to achieve competitive advantage in uncertain technology and complex environment. In this dynamic and complex environment, we can consider the organic organizations which allow adapting firms to quickly environmental changes as flexible organizations. Therefore, the answer to the question of whether organizational flexibility encourages organizational agility is important.

Although the concept of organizational agility is a popular field of study after the 2000s, Sharifi and Zhang (1999) are the researchers trying to explain this concept first and explained it in an agile production framework. Organizational agility can be stated as the ability to respond to customer demands and needs as quickly as possible by using the capabilities of enterprises in the face of changing environment and technology. In other words, it can be defined as the ability of a firm to use its internal capabilities and to meet its external expectations carefully in the most effective way in changing environment. Organizational agility means that the enterprise adapts and reorganizes its resources and competencies according to the changing environment. Organizational agility is to be agile not only in the production department, but in all other departments of an enterprise. Arteta and Giachetti (2004) have expressed that agility implies not only the ability to respond to unanticipated change (response-ability) but also to act proactively about change (knowledge management). Organizational agility has its capabilities. Companies must learn to be organizationally agile. To achieve it, companies must have some skills. There are different approaches to becoming organizationally agile by concentrating on different dimensions of the organizational agility model stated by Zhang and Sharifi (2000). This model emerged after the 2000s; has a structure consisting of three elements. These are agility drivers, agility capabilities and agility providers (Figure 1).

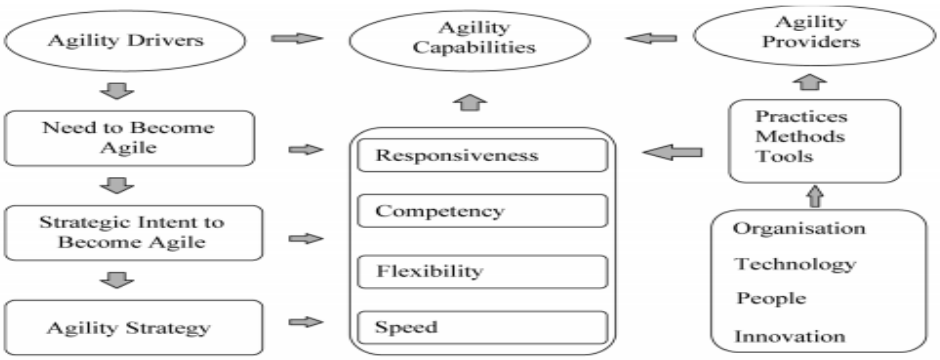

Figure 1. The conceptual model of agility

Source: Sharifi & Zhang (2001, p.775).

Agile drivers; the way the enterprises need to become agile, having strategic intent to be agile.

Agility capabilities; consist of four dimensions; competency, flexibility, responsiveness, speed which are the ability of the enterprises to respond to the changes. They are strategic abilities considered as the main attributes of the agile organization that allow successful dealing with changes (Sherehiy et al., 2007: 448).

Agile providers; the tools such as organization, technology, people, and innovation for managers to use these agility capabilities of the enterprises.

3. Purpose and Hypothesis

Today's high technology and speed of environment changes have created unpredictability and uncertainty in almost all companies. They also have forced them to be more dynamic, to have more flexible and agile abilities. In the innovation economy and industry 4.0, risk, uncertainty and changing are so high. So, understanding and awareness of the link between organizational flexibility and organizational agility are important to organizations. In this context, this research has basically two objectives: firstly, to determine the levels of organizational agility, level of agility capabilities (competency, flexibility, responsiveness, and speed) and level of organizational flexibility of firms operating in Sakarya 1st and 2nd Organized Industrial Zone; secondly, to determine the impact of organizational flexibility on organizational agility and agility capabilities (competency, flexibility, responsiveness, and speed).

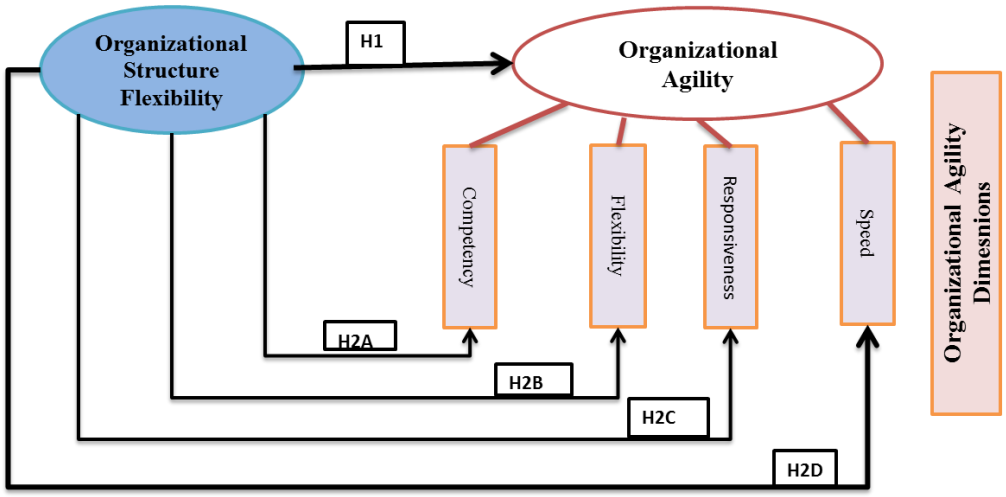

Figure 2. Research Model

Figure 2 presents the research model proposed in this paper, and summarizes the following objectives and hypotheses which are to be analyzed:

H_1: Organizational structure flexibility has a positive impact on organizational agility.

H_{2A}: Organizational structure flexibility has a positive impact on competency.

H_{2B}: Organizational structure flexibility has a positive impact on flexibility.

H_{2C}: Organizational structure flexibility has a positive impact on responsiveness.

H_{2D}: Organizational structure flexibility has a positive impact on speed.

4. Methodology

4.1 Sample

The sample of this research is composed of firms operating in the 1st and 2nd Organized Industrial Zone in Sakarya, located in the West of Turkey. According to Small and Downey (1996), turbulent times and uncertainty in the business environment have been recognized as the cause of most failures in the manufacturing industry. In order to attract attention to these failures that can arise in the manufacturing industry, and offer the organizational flexibility as a solution, this sample has been chosen. Simple random sampling was used to be able to get information from senior managers of 46 of 128 medium and large enterprises that 51 of them were operating in the 1st and 77 of them were operating in the 2nd Organized Industrial Zone in Sakarya, located in West of Turkey.

4.2 Instruments

Two scales (the measuring instrument) were used to solicit the responses of these managers. The first survey, which includes 12 items, is the Organizational Flexibility Scale developed by Koçyiğit (2018). This survey measures the organizational structure flexibility of firms. The second one is the Organizational Agility Scale, with 4 dimensions including 17 items, developed by Sharifi and Zhang (1999) and adapted to Turkish by Akkaya and Tabak (2018). The reliability and validity of both scales were tested in earlier studies. Reliability analysis and tests for normality were applied for all variables in this study as well. Items 8, 9 and 10 in organizational flexibility scale and items 5 and 13 in organizational agility scale were left out from analyses in compliance with reliability analyses. As shown in the below table, the reliabilities of the scales and its dimensions (excluding responsiveness) were higher than 0.6 as indicated by Cronbach's Alpha. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. However, there is actually no lower limit to the coefficient. George and Mallery (2003) provide the following rules of thumb: If Cronbach's alpha reliability coefficient is lower than 0.5, it is unacceptable.

Table 1. Overview of the dependent and independent variables.

Variables/Dimensions		items	Scales	Chronbach's alpha
Organizational flexibility		9	Developed and validated by Koçyiğit (2018)	0.694
Organizational agility		15	Developed by Sharifi and Zhang (1999), validated by Akkaya and Tabak (2018)	0.894
The dimensions of organizational agility	competency	7	-	0.819
	flexibility	3	-	0.687
	responsiveness	2	-	0.559
	speed	3		0.682

4.3 Data-gathering Process

The questionnaire was divided into three groups. The first part of the questionnaire was about reaching general information such as participants' organizational duties, the sector in which the enterprise operated, the main product character and the number of employees of enterprises. In the second part, it was aimed to measure the organizational flexibility of the companies which participated in the survey with the rating scale consisting of 12 phrases. In the third part, it was aimed to measure by 17 phrases the organizational agility. From the second part of the prepared questionnaire to the end of the questionnaire, a 5-point Likert scale was used for each item of variables. In order that designed questionnaires were filled in by managers, we got an appointment from each of them. 111 questionnaires were distributed to senior managers, and 111 questionnaires that were suitable for analysis were obtained.

5. Results Analysis

In order to see the causal link between the organizational structure flexibility and organizational agility capabilities, a linear simple regression model was performed. In other words, simple regression analyses were carried out to test the hypotheses of H_1, H_{2A}, H_{2B}, H_{2C} and H_{2D} which were developed to reveal the impact of the independent variable on dependent variables. The results of the analyses were summarized in the tables below.

Table 2. Organizational structure flexibility in relation to organizational agility

Dependent Variables	**Beta**	**R^2**	**F-Test**	**t- value**	**p-value**
Organizational Agility	.457	.208	28.699	5.357	.000

Independent Variable: Organizational Structure Flexibility

As seen in Table 2, the regression analysis showed that there was a significant relationship between organizational structure flexibility and organizational agility. It was evident that the study confirmed the H_1 suggested by the theoretical model as presented in Figure 2.

Therefore, Hypothesis-1 was accepted, since a positive relationship existed between organizational structure flexibility (independent variable) and organizational agility (dependent variable). The R^2 showed that the organizational structure flexibility in the model explained 20.8 percent of the variability in organizational agility of companies. The rest 79.2 percent of the variation in organizational agility was not explained by the independent variables of the study. p-value related to model (0.0001) indicated a strong statistical significance at the 1 % level of significance, which shows the explanatory power of the research model.

Table 3. Organizational structure flexibility in relation to competency, flexibility, speed, and responsiveness

Dependent Variables	Beta	R^2	F-Test	t- value	p -value
Competency	.606	.367	63.101	7.944	.000
Flexibility	.270	.073	8.586	2.930	.004
Speed	.425	.181	24.061	4.905	.000
Responsiveness	.238	.056	6.526	2.555	.012

Independent Variable: Organizational Structure Flexibility

Simple regression analyses were made for H_{2A}, H_{2B}, $H_{2C,}$ and H_{2D} separately. However, the results of the analyses were summarized on the single table which is currently Table 3. Table 3 shows that there were statistically significant relationships between organizational structure flexibility and competency, flexibility speed and responsiveness. The results of regression analyses in the study confirmed the H_{2A}, H_{2B}, H_{2C} and H_{2D} suggested by the theoretical model as presented in Figure 2. All these hypotheses were accepted, since a positive and statistically significant relationship existed between organizational structure flexibility (independent variable) and competency, flexibility, speed and responsiveness (dependent variables). The R^2s showed that the organizational structure flexibility in models explained 36.7 percent of the variability in the competency of companies, 7.3 percent of the variability in the flexibility of them, 18.1 percent of the variability in the speed of them and 5.6 percent of the variability in the responsiveness of them. Moreover, the p–values of the t-values related to models ranged from .012 to .000. These values indicated the strong statistical significance at nearly a 1 % level of significance, which shows the explanatory power of the research model.

4. Conclusion, Discussion and Suggestions

The regression analysis showed that organizational structure flexibility has a positive impact on organizational agility, each of the four capabilities of organizational agility. It is evident that the study confirmed the existence of all 5 relationships suggested by the theoretical model as presented in Figure 2. According to the results of the study, organizational structure flexibility is important to firms to be more agile and it has a positive impact on organizational agility capabilities (competence, flexibility, responsiveness, and speed). The results of this

research have been consistent with the results of some current studies. Segert et al. (2019) have found that there is a significant relationship between flexibility and organizational agility. Chester and Allenby (2019) have stated that successful infrastructure in the twenty-first century will need to be flexible and agile and they also have realized the relationship between flexibility and agility. Darvishmotevali et al. (2020 studies on the relationship between environmental uncertainty and organizational agility) have reached the same results. They have found that organizational agility moderates the negative impacts of competitive and technological uncertainty on organizational creativity. They have suggested that organizations in highly dynamic and complex environments must reduce bureaucracy to manage the challenges of uncertainty. Dey et al. (2019) investigated the relationship between pursued organizational strategy and manufacturing flexibility. They have found a positive relationship between organizational strategy and flexibility. Thugs and Nejad (2017) have concluded that organizational structure has a positive effect on organizational agility. Furthermore Alavi et al. (2014) have found that organizational learning has a significant impact on organizational agility. These researches have supported the hypotheses that decentralization and straight organizational structures provide agility for work. This is linked to the quick decision-making of an agile organization. Management practitioners need new solutions, structures, and tools to adapt to the changing environment and capture opportunities (Žitkienė and Deksnys, 2018: p. 116).

Organizational agility has become an important organizational feature in adapting to the dynamic and competitive environment of enterprises. Because organizational flexibility provides enterprises the ability which responds to environmental threats and realizes opportunities on time. The ability of an organization to adapt to its environment to be agile will be able to be possible with the organization structure allowing this adaptation. The flexible organization structure may allow it to be agile.

The results of this study provide some useful managerial implications for managers in small and medium-sized enterprises. In the face of an increasingly diversified and competitive business environment, managers need to see and accurately assess their changing internal and external environment. Flexible strategic management is needed to deal with the uncertainty of the environment and technology. As both business and technological environments change at an increasing rate, flexibility has become a critical issue for management and development performance (Günsel et al, 2012: p. 853; Günsel & Açikgöz, 2013:p. 359). Flexible strategic management is needed to deal with different types of flexibility such as human resources, financial, etc. Identifying the type of flexibility and its impact on agility can enable managers to make correct decisions, can develop the strategy implementations to reduce potential risks, and can improve the organizational creativity and performance.

Finally, in the literature part of the study, it is stated that some variables such as organization, technology and innovation are agile tools and providers. However, this study is concerned only with the organizational capabilities of organizational agility. In future studies, the relations of these variables and providers can be researched with the interaction of agility and

organizational structure.

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Appendix A. The scales used in the study

The scale of organizational flexibility
1. To enable that employees take initiative for works
2. Multidirectional communication (vertical, horizontal and cross)
3. Informing and consultation for business conduct
4. Restatement the employees' roles according to changed conditions
5. Job design according to employees' cooperation and interactions
6.Information sharing by senior management
7. Participative management
8. Multifunctionality rather than employees' specialization
9. Teamwork
10. Few and flexible rules
11. Controlling each other rather than hierarchical control
12. Few hierarchic levels in the organization

The scale of capabilities for achieving agility	
Competency	1.Strategic vision
	2.Appropriate technology (hard and soft), or sufficient technological ability
	3. Products/services quality
	4. Cost- effectiveness
	5. High rate of new products introduction
	6. Knowledgeable, competent, and empowered people
	7. Operations efficiency and effectiveness
	8. Co-operation (internal and external) (joint venture, virtual organization)
Flexibility	9. Product model/configuration flexibility
	10. Product volume flexibility
	11. Organization and organizational issues flexibility
Responsiveness	12. Recovering from changes.
	13. Sensing, perceiving and anticipating changes

	14. Immediate reaction to change by effecting them into system
Quickness	15. Fast operations time
	16. Quick new products time-to-market
	17. Products and services delivery quickness and timeliness