

The mediating role of organizational innovation on the impact of strategic agility on firm performance

Organizational
innovation and
strategic
agility

765

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Abstract

Purpose – The field of strategic management mainly concerns with the achievement and sustainability of competitive advantage since the sustainability of strategic competitive advantage is more challenging. The concept of innovation can also be regarded as a to respond continuously changing environmental conditions and to sustain firm profits. The aim of this paper is to examine the mediating role of organizational innovation for the impact of strategic agility on firm performance and to determine the relationship among variables. Although there is a significant amount of work on organizational innovation, literature is still lacking in the debate on strategic agility and firm performance.

Design/methodology/approach – An online questionnaire was administered to 216 firms operating in the Sakarya Organized Industrial Zone (Marmara Region of Turkey) during September–December 2019 and the data were analyzed using structural equation analysis for hypothesis testing.

Findings – Results reveal that strategic agility has a positive impact on both firm performance ($\beta = 0.895$) and organizational innovation ($\beta = 0.854$), and organizational innovation ($\beta = 0.485$) plays a partial mediating role on this relationship.

Originality/value – The results of this study improve our understanding of how these factors affect firm performance in the organized industrial zone.

Keywords Strategic agility, Firm performance, Organizational innovation, Dynamic capabilities, Competitive advantage

Paper type Research paper

1. Introduction

The focus of strategic management as a discipline is mostly based on gaining and maintaining competitive advantage. Most of the extant research on sustainable competitive advantage isolates a firm's opportunities and threats (Porter, 1980; Porter and Advantage, 1985) to explain their strengths and weaknesses (Hofer and Schendel, 1978) or to analyze how a mixed strategy can be created from these strategies. As a result of approaches focusing both on the strengths and weaknesses of the business in internal analyses and on opportunities and threats that are outside the business, the literature began to focus on the environmental competitiveness of the business (Lamb, 1984).

Under dynamic environmental conditions, organizations should use their resources efficiently to ensure profitability in the short-run, and in order to maintain success in the long-run, they must acquire new skills, enter new markets and seek new customers (Afacan Findikli et al., 2015). It is important to acknowledge that businesses do not have the luxury of choosing an innovation design that will adapt to all the conditions they always encounter. The weaker the fit between the choice of innovation design and business conditions, the greater the number and magnitude of potential problems, hence a firm is required to develop



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new capabilities (Shahid *et al.*, 1997). These capabilities are directly related to the mobilization of resources available within the enterprise.

Some authors state that the value creation strategy of businesses encompasses three resources. These are physical capital resources (Williamson, 1975), human capital resources (Becker, 1964) and organizational capital resources (Tomer, 1987). Physical capital resources refer to companies' physical technology resources, access to raw materials, geographic location and equipment. Human capital resources, on the other hand, represent education, expertise, justice, intellectuality, relationships and the perspectives and visions of managers and employees in the firm. Organizational capital resources are related to the control and coordination of firms' structures, formal and informal planning processes and systems (Barney, 1991).

Having the advantage and control of resources that other companies cannot imitate is seen as most important for creating sustainable competitive advantage. Strategic agility behavior and organizational innovation perception take an important place among these resources. Acting agile and innovating in turbulent environmental conditions are expected to result in significant increase in company performance.

First, it includes a series of actions carried out by an organization operating in an environment characterized by strategic agility and rapid and unpredictable changes. Agile organizations are companies that have successfully adapted to the destructive environment. Secondly, strategic agility requires changes that are different from other types of regular and routine changes. Changes arising from strategic agility can be cited as a continuous, systematic variety in an organization's products, processes, services and structures (Tallon and Pinsonneault, 2011). Businesses adopt organizational innovation to achieve business goals in terms of efficiency, quality control, learning, product and process innovation or market development (Arranz *et al.*, 2019; Damanpour *et al.*, 2009). The increase in innovation makes meeting customer needs, gaining new markets, reducing costs, increasing production flexibility, etc. possible. Therefore, it is vital to address the critical determinants of effective innovation management in an organizational context (Sariol and Abebe, 2017; Wong *et al.*, 2011).

2. Strategic agility

In recent years, changes in the market and business environment have become more important than ever. The internal changes in the organizational environment such as the increasing domination of the Internet in the business world, the Internet of things, fast emerging events such as Industry 4.0, rapid technological developments, changes in the tastes of customers, the speed of information transfer and complex employee management force businesses to transform. It has caused unprecedented pressure on businesses to quickly adapt and respond to changes in their work environments (Nejatian *et al.*, 2019).

There is a consensus on the importance of strategic agility in the light of complex management challenges such as globalization, dynamic environment, speed of innovation, mergers and acquisitions. The struggle to cope with increased environmental uncertainties including various practices and techniques commonly used in different sectors, has consequently, required a revision of both strategic decision making processes and their nature (Vecchiato, 2015).

The concept of agility emerged at the beginning of the 20th century in a research study funded by the US government at the Iacocca Institute in 1991. Along with other research studies in this area, many definitions of agility have emerged. For example, Goldman and Nagel (1993) defined the concept of agility as changing customer opportunities in a continuous and unpredictable competitive environment so as to enhance profitability. In addition, agility has been defined as the ability to survive and develop in a competitive environment by reacting quickly and efficiently to changing markets driven by specially designed products and services (Gunasekaran, 1999). Strategic agility is more about the

ability to think and act differently to bring about new business model innovations (Doz and Kosonen, 2017, p. 7). In its most general sense, strategic agility can be defined as competitive capabilities that enable organizations to cope with changing environments by constantly perceiving, detecting and capturing with strategic moves and changing organizational configuration (Nejatian *et al.*, 2019).

Agility in business research is a new generation concept and its semantical use varies according to the research area. Studies on agility can generally be divided into two groups. In the first group, agility is considered as a generic capability that allows the company to adapt its operations quickly to rapidly changing market conditions and sudden changes in consumer needs (Braunscheidel and Suresh, 2009). In the second group of studies, agility is considered not only as a capability but also as an integrated strategy, paradigm, system or management practice built on multidimensional skills (Dyer and Shafer, 1998). Accordingly, an agile firm should be flexible in its operations and be agile in reorganizing its strategy in a manner that is sensitive and adaptive to environmental changes.

Strategic agility requires inventing new business models and new categories rather than rearranging old products and categories. In the context of the concept of strategic agility, researchers have stated that factors such as developing strategies to cope with discontinuities and disruptions, finding new ways to manage business transformations and renewals, developing dynamic capabilities, creating imitation skills, providing a high level of organizational flexibility and convenience as well as developments in learning are important (Weber and Tarba, 2014).

Strategic agility is not about a particular change that an organization is dealing with in response to a major threat or crisis. Instead, strategic agility is about a firm's constant ability to effectively change the flow of action to maintain its competitive advantages (Weber and Tarba, 2014).

For organizations competing in varying environmental conditions, strategic agility can be the key to sustainability in the market. In turbulent environmental conditions, intense competition can define key agility indicators that contribute to the strategic essence of competitive organizations.

Agile organizations have the ability to initiate continuous renewal, which includes adapting existing competencies to a constantly changing environment and simultaneously reconfiguring themselves to survive and develop for a long time (Agarwal and Helfat, 2009). Strategic agility is one of the key determinants of a firm's success in a chaotic environment in which new markets emerge, crash, divide, evolve and die. Strategic agility is to be flexible in understanding new developments, to constantly adjust the company's strategic direction and to develop innovative methods to create value (Teece, 2007; Vecchiato, 2015; Weber and Tarba, 2014).

Discontinuity and disruptions of strategies often result in changes to business models. Contrarily, effective companies develop business models that naturally become increasingly stable and consequently solidified over time. The solution to this contradictory situation can be facilitated with the help of core meta-skills (strategic sensitivity, leadership cohesion and resource fluidity) developed to make an organization more agile. Many companies fail not because they do something wrong or incomplete, but because they continue to do things that have been right for a long time and are victim to the rigidity of business models (Doz and Kosonen, 2010). Therefore, agile organizations are those who show high flexibility. In addition, speed is needed to detect environmental changes and respond adequately. Consequently, strategic agility requires significant investment in resources to provide the high flexibility and speed required to respond to sudden environmental threats and opportunities (Tallon and Pinsonneault, 2011; Weber and Tarba, 2014).

Strategic agility consists of three main dimensions (Doz and Kosonen, 2017):

- (1) strategic sensitivity (both perception awareness and attention intensity);

- (2) collective obligation (the ability of the top management team to make bold and quick decisions without the opportunity for win-loss policies to be stumbled at the top);
- (3) resource fluidity (the capacity to rearrange internal business systems and rapidly redistribute resources).

Strategic agility is an important paradigm for repeated success, slowdown, solidification, crises and similar adverse organizational problems.

3. Firm performance

In today's business environments that move at an unsteady pace, a better understanding of the factors affecting firm performance (FP) is becoming even more important. Given the increasing competition, technological developments and rapidly changing customer demands, managers have to find effective practices to achieve and exceed corporate performance goals (Mammassis and Kostopoulos, 2019).

In general, the concept of performance refers to the process of measuring the efficiency and effectiveness of an action. Performance measurement plays a more critical role in current business management compared to quantification and accounting (Al-Matari *et al.*, 2014). Performance measurement is critical for effective management of any company (Demirbag *et al.*, 2006).

The company's success is basically explained by its performance over a certain time period. It is possible to measure the performance of a company by comparing its performances in different time periods (Al-Matari *et al.*, 2014). For this purpose, sometimes a year is divided into four quarters and sometimes six-month period indicators in which comparisons are made to measure performances.

The performance of a firm is significantly affected by corporate governance, and if functions are set up appropriately for the corporate governance system, that business attracts investment and the foundations of the company are financially strengthened, which leads to the expected increase in firm performance. In other words, effective corporate governance protects against possible financial difficulties and facilitates remarkable growth. Hence, corporate governance plays an important role in the growth of FP (Ehikioya, 2009).

Measuring the performance of a business can provide valuable information that allows management to track performance, report progress, improve motivation and communication, and identify problems (Wagoner *et al.*, 1999).

FP in general encompasses profitability performance, growth performance, market value performance, customer satisfaction, employee satisfaction, environmental performance, environmental audit performance, corporate management performance and social performance (Selvam *et al.*, 2016).

Outstanding financial performance is a way to satisfy investors and can be represented by profitability, growth and market value. These three components: profitability, growth and market value complement each other. Profitability measures a firm's ability to generate returns on past investments (Glick *et al.*, 2005). Market value performance refers to the price of the firm's stock in the market. A financial asset, for instance a company's share, should gain value in the market. The market value is also widely used as the value of a publicly traded company and is obtained by multiplying the number of its shares by the current share price (Selvam *et al.*, 2016).

Market value is considered as a possible variable and represents the evaluation and expectation of companies' future performance relative to competitors. There should be a relationship with firms' historical profitability and growth levels, but it should also include future expectations of market changes and competitive movements (Lingaria *et al.*, 2015).

Many different techniques to measure financial performance have emerged over time. Due to increase in the number of techniques and differentiations in the purposes of calculation

and use of techniques, a categorization has been made in the form of traditional and modern techniques for measuring financial performance. Traditional measures are defined as accounting-based criteria, while modern criteria are expressed as value-based criteria. Value criteria include approaches to measure market value, customer value, etc.

There are two main approaches to data collection in the measurement of financial performance in the modern sense. The first is objective measures based on the firm's financial data, and the other is perceptual, that is subjective measures, based on the opinions of the firm's managers or employees. Collecting data with subjective measures is an easier approach since it is often more difficult for companies to obtain their financial data when they are not publicly traded (Ravichandran *et al.*, 2005).

4. Organizational innovation

The concept of innovation is used in the existing literature with a relatively broad meaning. The early evolving stage of studies concerned with innovation has been emphasized on subjects including "spread of innovation" and "adoption of innovation" (Kimberly and Evanisko, 1981). Later, it appears a clear distinction on innovation-focused studies such as "organizational" and "technological" dimensions of innovation. However, organizational dimension of innovation was more widely studied than technological dimension (Camisón and Villar-López, 2014; Liao *et al.*, 2008). Fortunately, the studies concentrated on organizational innovation take their respectable place in the existing literature (Anzola-Román *et al.*, 2018; Montalvan-Burbano *et al.*, 2019; Yıldız, 2019).

Innovation plays an important role in the contemporary business environment. Innovation is the development of value for new customers, with solutions that meet new needs, identify needs or meet existing customers' and market needs in new ways. (Alshammari *et al.*, 2014).

Innovation is one of the basic tools of growth strategies to enter new markets, increase an existing market share and in enhancing the competitive advantage of a company. According to O'Sullivan and Dooley, "Innovation is the process of making big, small, radical and increasing changes to products, processes and services that lead to the promotion of something new for the organization that adds value to customers and contributes to information. In addition, they cannot be imitated, patented and is hidden in a kind of organization" (Barroso Simao *et al.*, 2016; Sariol and Abebe, 2017; Zulfikar *et al.*, 2019).

There is a consensus in studies on innovation that innovation is the primary source of economic growth, industrial change, competitive advantage and public service in every working segment that needs innovation such as academicians, policy makers, corporate executives and public administrators (Damanpour *et al.*, 2009; Evangelista and Vezzani, 2010). Recent developments in firm-level data and economic growth theory emphasize the importance of innovation for sustainable production and productivity growth. (Wadhwa and Chaudhry, 2018).

Many businesses are known to face competitive challenges due to the rapid advancement of technological change. Industries that rely on highly advanced technologies or compete globally are vulnerable to the need to make continuous and rapid changes in organizational activities. These conditions led management theorists and practitioners, who called for more creativity and innovation in product lines, management practices and production processes, to a process toward organizational innovation (Shahid *et al.*, 1997).

It is necessary to evaluate the studies on organizational innovation from three different perspectives. The first perspective of studies on organizational innovation focuses on defining the structural features of an innovative organization and its effects on product, technical and process innovations (Ballot *et al.*, 2015; Liao *et al.*, 2008). The second perspective of studies on organizational innovation focuses on organizational change and development theories. These studies aim to analyze and understand how organizations change. This research area includes how organizational change can occur (Greiner, 1967; Hannan and

Freeman, 1977, 1984) and the classification of different types of organizational changes (Levy and Merry, 1986). It aims to help organizations overcome their resistance to organizational change and better adapt to changing environments and technologies (Armbruster *et al.*, 2008). The characteristics that distinguish organizational innovation from other organizational changes are based on the use of an organizational method that has never been used in the company and the emergence of innovation as a result of the strategic decisions of the management of the company (Ganzer *et al.*, 2017; Laforet, 2013; OECD/Eurostat, 2018).

The third perspective of studies on organizational innovation focuses on how organizational innovation occurs, develops and grows at micro levels within the organization. This phase focuses on organizational cognition and learning theories (Argyris and Schoen, 1978; Duncan and Weiss, 1979) as well as organizational creativity theories (Amabile, 1998).

According to Amabile and Conti (1999), it is a known phenomenon that the work environment causes creativity and innovation decreases when barriers in the work environment increase. These environmental factors that affect creativity, autonomy or freedom, resources and pressures are used to encourage overcoming organizational barriers to creativity. It is known that creative behavior expressing the behavior related to the production of both new and useful ideas is a concept related to innovation (Altunoglu and Bulgurcu Gürel, 2015; Gumusluoglu and Ilsev, 2009).

The response of companies to rapidly changing environments can be best achieved through innovation. Research on innovation demonstrates that innovation occurs in complex structures, and in order to determine the conditions under which it occurs lies much emphasis on the structure and conditions. To get rid of the complexity of the structure, it is necessary to distinguish between the technical (new products, new production methods, etc.) and nontechnical aspects (new markets, new forms of organization, etc.) of the structure.

Technical innovations are related to product and process innovations, whereas nontechnical innovations are related to marketing and organizational innovations. Two key issues are suggested in determining the circumstances under which organizations bring about organizational innovations. The first is the organizational context of a firm, namely firm size, workforce education and degree of internationalization, while the second is expressed as knowledge-based relationships, thus, internal environment, external environment and access to professional information resources (Armbruster *et al.*, 2008; Ganter and Hecker, 2013; Mol and Birkinshaw, 2009; Arranz *et al.*, 2019; Sanchez-Famoso *et al.*, 2014).

Innovation-oriented companies exist for the satisfaction of customers, high performance and sustainability of employees. It is important that an innovation-oriented environment gives more pleasure, self-realization and provides job satisfaction (Armbruster *et al.*, 2008; Fadil *et al.*, 2016; Laforet, 2013). Beyond the ubiquitous technological and product innovation, a number of subfields have emerged related to innovation elements such as business modeling (Markides, 1997), service innovation (Gallouj and Weinstein, 1997) and process innovation (Hobbs *et al.*, 2008; Mol and Birkinshaw, 2009). Accordingly, subfields of innovation can be summarized as follows (Liao and Wu, 2010; Wang and Ahmed, 2004; Yıldız, 2019):

- (1) Product innovation means “innovation of new products that are put on the market in time”.
- (2) Market innovativeness is defined as “the innovation of approaches that companies have adopted to enter and benefit from the target market”.
- (3) Process innovation means “developing new production methods, management approaches and technology to improve production and management processes”.

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- (4) Behavioral innovativeness is related to “an organization’s behavioral tendency or willingness to change”.
 - (5) Strategic innovation emphasizes the “ability of an organization to match external opportunities with internal capabilities to timely identify external opportunities and deliver innovative products and explore new markets or sectors”.

Successful companies value their customers, innovate to serve their customers and include their customers in the innovation process by receiving feedback from their customers. The rise of companies that value customers and customers’ ideas improves FP and reduces firm risk with positive feedback about products (Burrus *et al.*, 2018).

4.1 Development of hypotheses

Organizations adopt innovation in response to changes in technological and managerial information, industry competition, expectations of components or senior executives’ desire to acquire different qualifications and improve performance levels. Adoption of innovation can be used as an organizational compliance and change tool to facilitate the achievement of the company’s performance goals, especially under conditions of intense competition, rapidly changing market, scarce resources, higher quality, better products and services, and customer demand (Evangelista and Vezzani, 2010; Jansen *et al.*, 2006; Montalvan-Burbano *et al.*, 2019).

Many studies examine the relationship between organizational innovation and firm performance. According to Camisón and Villar-López (2014), process and management innovation affect the performance of the company separately. Similarly, according to Naranjo-Valencia *et al.* (2011), product, process and management innovation positively affect organizational performance (Ali *et al.*, 2016; Ballot *et al.*, 2015; Barroso Simao *et al.*, 2016). It is accepted that innovation creates added value for organizational performance (Alshammari *et al.*, 2014).

Effective adoption of constantly evolving new technologies in a constantly changing business environment is a critical determinant of corporate competitiveness. It can be used as a tool to adopt innovation, restructure the resource base and keep up with competition and improve performance (Fadil *et al.*, 2016; Makkonen *et al.*, 2016; Sutanto, 2017).

Most research tends to focus on innovation as resulting from a product or process. Few studies examine the results of innovation empirically at the firm level or examine the relationship between organizational innovation and financial performance (Laforet, 2013). In this regard, this research is considered to contribute to the existing literature.

Firms adopt corporate innovations (CIs) to achieve their business goals in terms of operational efficiency, quality control, learning, product and process innovation, or market development (Damanpour and Schneider, 2006). Therefore, CI serves as an important strategic tool to increase firm performance. These include tools used in value creation, technology development and achieving competitive advantage (Hamel, 2009).

Some studies perceived organizational innovation as a precursor and tried to determine its effects on product and process innovation and FP (Camisón and VillarLópez, 2014). Organizational innovations developed by companies provide them with timely delivery, flexibility and savings, and they also have positive effects on the financial performance of the company (Armbruster *et al.*, 2008). It has been demonstrated in many studies that firms that undertake organizational innovation activities show better firm performance, for example, in reducing administrative costs or procurement spending or an increase in employee satisfaction which in turn results in an increase in employee productivity (Damanpour and Schneider, 2006; Damanpour *et al.*, 2009; Arranz *et al.*, 2019).

Studies indicating that organizational innovation has a positive impact on firm performance (FP) (Armbruster *et al.*, 2008; Camisón and Villar-López, 2014; Arranz *et al.*,

2019) show that this result is very important strategically because organizational innovation (OI) allows firms to achieve competitive advantage.

In the light of all these views, the following hypotheses have been developed:

- H1. Strategic agility positively and significantly affects firm performance.
- H2. Strategic agility positively and significantly affects organizational innovation.
- H3. Organizational innovation affects FP positively and significantly.
- H4. Organizational innovation plays an intermediary role in the relationship between strategic agility and firm performance.

4.2 Method

In this section, the purpose and model of the research, the selection of the sample, the development of the data collection tool, the data collection process, and the statistical methods and techniques used in data collection are explained. These data were analyzed using appropriate statistical package programs.

4.3 Research purpose and model

Among the various factors affecting firm performance, strategic agility and organizational innovation are quite new concepts in the literature. In this context, the aim of the research is to reveal the mediating role of organizational innovation on the impact of strategic agility on FP and to examine the relationship between variables (see Figure 1).

With the aim stated above, the relationships between independent, dependent and intermediary variables in the research are shown in the model below. In addition to a few studies examining the relationship between strategic agility and firm performance, examining the mediating role of organizational innovation makes this research completely unique.

4.4 Research population and sample selection

In accordance with the purpose of the research, companies operating in Sakarya Organized Industrial Zones constitute the research population for analysis. The number of companies in the Organized Industrial Zone, which constitutes the research population, is 242. With 95% confidence limit and 5% margin of error, the sample size to represent the population was determined as 148 (<http://www.surveysystem.com/sscalc.htm>). The research was carried out between February and April 2019 via the electronic survey system. A total of 216 incomplete and nondefective surveys were taken into consideration.

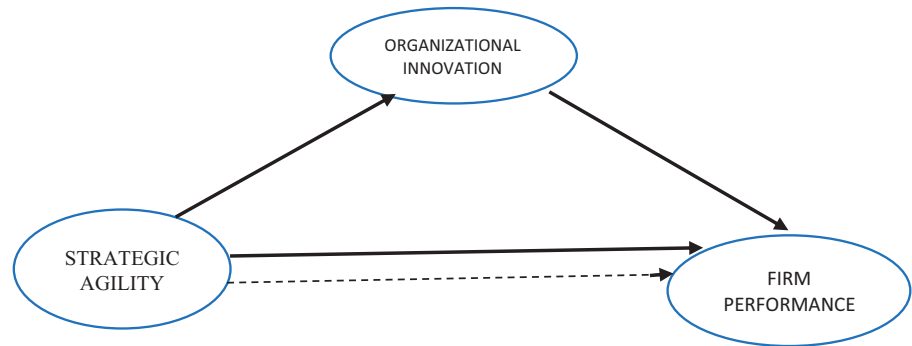


Figure 1.
Research model

4.5 Creating question forms

In this research, basically research and measurement method based on quantitative data have been adopted. In the research, the survey method was used as a data collection tool. The survey consists of three parts. In the first section, closed-ended questions to determine the demographic characteristics of the employees who participated in the research such as gender, working time, number of employees and the sector are included. Cronbach's alpha reliability coefficients were analyzed for the data collection tools used in the study.

4.5.1 Strategic agility. In the second part of the questionnaire, the one-item scale consisting of eight items and developed by Tallon and Pinsonneault (2011) to measure strategic agility was used. In order to test the construct validity of the strategic agility scale, an explanatory factor analysis with varimax rotation was applied using the principal components method. At the end of the analysis, it was determined that the data fitted the single factor structure of the scale. The only factor obtained as a result of exploratory factor analysis explains 74.88% of the total variance. KMO (Kaiser–Meyer–Olkin measure of sampling adequacy) sample adequacy criterion (0.943) indicating the condition to apply descriptive factor analysis to the research data and the degree of sphericity indicating that significant factors may emerge from the research data (Barlett's Test of Sphericity; 1,578,560; $p < 0.000$) are sufficient.

After the explanatory factor analysis, confirmatory factor analysis was performed with the analysis of moment structures (AMOS) package program. When the regression loads obtained from the model were analyzed based on factor analysis results, it was understood that the regression loads of all expressions were higher than 0.50. At the end of the analysis, it is seen that if modifications are made between the item no. SA2 and SA3, the chi-square value will increase and the compliance values will also increase (see Figure 2). As a result of the reliability analysis, the total Cronbach's alpha reliability coefficient of the scale was found to be 0.95 (shown in Table 1).

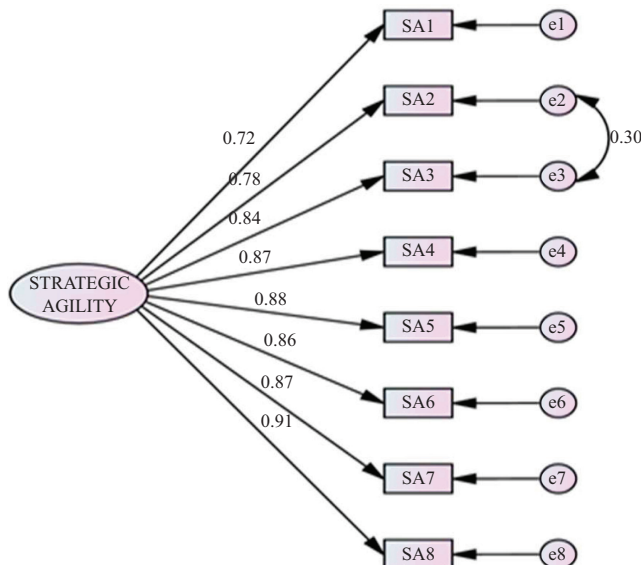


Figure 2.
Single factor
confirmatory factor
analysis related to
strategic agility

4.5.2 Firm performance. In the third part of the survey, the seven-item and one-dimensional Firm Performance Scale developed by [Ravichandran et al. \(2005\)](#) was used to measure FP. In order to test the construct validity of the FP scale, varimax rotation explanatory factor analysis was applied using the principal components method. At the end of the analysis, it was determined that the data fitted the single factor structure of the scale. The only factor obtained as a result of exploratory factor analysis explains 73.42% of the total variance. KMO sample adequacy criterion (0.931) indicating the condition to apply descriptive factor analysis to the research data and the degree of sphericity indicating that significant factors may emerge from the research data (Barlett's test of sphericity; 1,203,633; $p < 0.000$) are sufficient.

After the explanatory factor analysis, confirmatory factor analysis was performed with the AMOS package program. When the regression loads obtained from the model were analyzed based on factor analysis results, it was understood that the regression loads of all expressions were higher than 0.50. At the end of the analysis, it is seen that if modifications are made between FP6 and FP7, the chi-square value will increase and the compliance values will also increase (see [Figure 3](#)). As a result of the reliability analysis, the total Cronbach's alpha reliability coefficient of the scale was found to be 0.94 (shown in [Table 1](#)).

4.5.3 Organizational innovation. In the fourth part of the survey, the ten-item and one-dimensional Organizational Innovation Scale developed by [Erdem et al. \(2011\)](#) was used. All of the expressions in the scale are based on the five-point Likert Scale, where 1 is "I strongly disagree" and 5 is "I strongly agree". In order to test the construct validity of the organizational innovation scale, varimax rotation explanatory factor analysis was applied using the principal components method. At the end of the analysis, it was determined that the data fitted the single factor structure of the scale. The only factor obtained as a result of exploratory factor analysis explains 67.01% of the total variance.

KMO sample adequacy criterion (0.929) indicating the condition to apply descriptive factor analysis to the research data and the degree of sphericity indicating that significant factors may emerge from the research data (Barlett's test of sphericity; 1,692,370; $p < 0.000$) are sufficient.

After the explanatory factor analysis, confirmatory factor analysis was performed with the AMOS package program. When the regression loads obtained from the model were analyzed based on factor analysis result, it was understood that the regression loads of all expressions were higher than 0.50. At the end of the analysis, it is seen that if modification is made between OI1 and OI2 and OI7 and OI10 (see [Figure 4](#)), the chi-square value will increase and the compliance values will also increase. As a result of the reliability analysis, the total Cronbach's alpha reliability coefficient of the scale was found to be 0.94 (shown in [Table 1](#)).

4.6 Findings

Of the respondents, 51.9% ($n = 112$) are women and 48.1% ($n = 104$) are men. Considering the professional experience of the participants, 34.7% between 4 and 6 years ($n = 75$), 30.1% between 7 and 10 years ($n = 65$), 19% between 1 and 3 years ($n = 41$), 3.85% between 16 and

Variables	CMIN/DF	GFI	AGFI	RMSEA	TLI	CFI
Strategic agility	2,415	0.950	0.905	0.081	0.975	0.983
Firm performance	1,665	0.973	0.942	0.056	0.988	0.993
Organizational innovation	2,679	0.925	0.876	0.088	0.955	0.967

Table 1.
Goodness of fit values
of scales

Note(s): CMIN/DF (Minimum discrepancy per degree of freedom), GFI (Goodness of Fit Index), AGFI (Adjusted Goodness Fit Indices), RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), TLI (Tucker-Lewis Index)

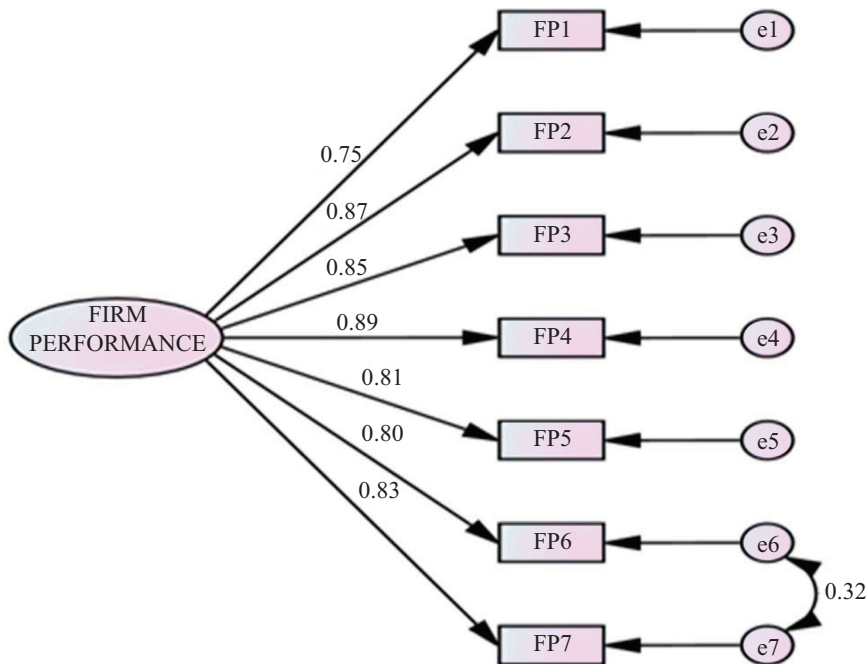


Figure 3.
Single factor
confirmatory factor
analysis related to firm
performance

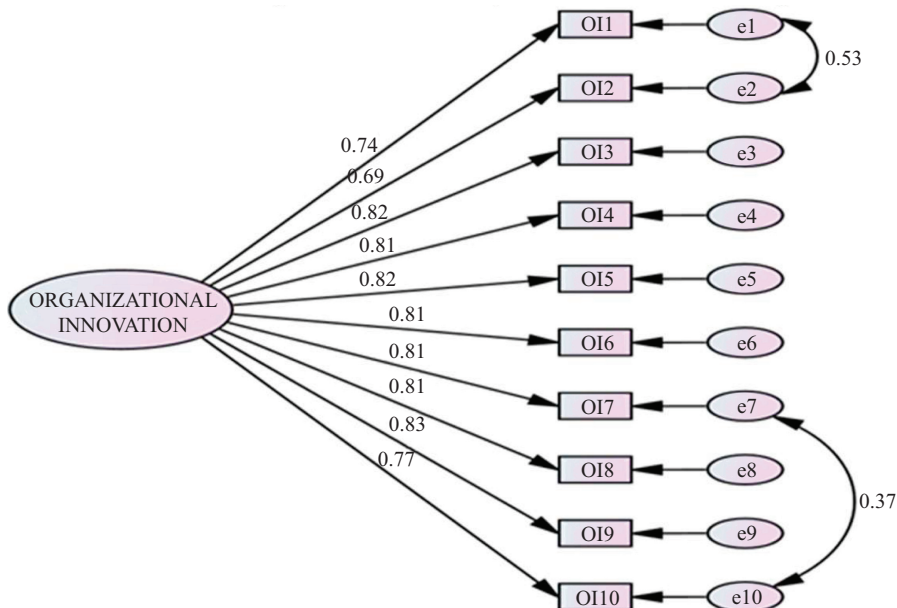


Figure 4.
Single factor
confirmatory factor
analysis related to
organizational
innovation

20 years ($n = 6$) and finally 8.97% ($n = 14$) stated that they have been working for more than 20 years. When considered in terms of “number of employees” variable in companies participating in the research, 13% 1–10 people ($n = 28$), 19% 11–20 people ($n = 41$), 28.7% 21–30 people ($n = 62$), 10.6% 31–40 people ($n = 23$) and finally, 28.7% of 40 and above people ($n = 62$) work in companies. Considering the sectoral distribution of companies, 11.6% are in automotive ($n = 25$), 9.3% in structure ($n = 20$), 8.8% in plastic ($n = 19$), 10.6% in paper ($n = 23$), 8.8% in forest ($n = 19$), 13.4% in chemistry ($n = 29$), 9.7% in textile ($n = 21$), 9.7% in food ($n = 21$), 11% in firms, 1% in electricity ($n = 24$), 4.6% in iron and steel ($n = 10$) and 2.3% in other ($n = 5$) sectors (shown in Table 2).

Correlation analysis was used to determine the direction and magnitude of the relationship between the variables in order to test the model underlying our research (shown in Table 3).

The correlation analysis revealed that

- (1) There is a positive and strong relationship between strategic agility and FP at the level of 858, and a positive and strong relationship at the level of organizational innovation and at the level of 819.
- (2) There is a positive and strong relationship at 848 level between FP and organizational innovation.

Baron and Kenny’s (1986) method was used to test the mediation model in structural equation modeling. According to the method of Baron and Kenny (1986), some criteria must be met in order to perform the mediation test. These criteria are realized in four steps. These criteria are as follows:

- (1) There should be a statistically significant relationship between independent variables and the dependent variable.

Table 2.
Findings related to
demographic variables

Variable	<i>f</i>	%	Variable	<i>f</i>	%
<i>Gender</i>			<i>Sector</i>		
Female	112	51.9	Automotive	25	11.6
Male	104	48.1	Structure	20	9.3
<i>Tenure of work in the institution</i>			Plastic	19	8.8
1–3 years	41	19.0	Paper	23	10.6
4–6 years	75	34.7	Forest	19	8.8
7–10 years	65	30.1	Chemistry	29	13.4
10 years+	35	16.2	Textile	21	9.7
<i>Number of people working in the company</i>			Food	21	9.7
1–10 people	28	13.0	Electricity	24	11.1
11–20 people	41	19.0	Iron-steel	10	4.6
21–30 people	62	28.7	Other	5	2.3
31–40 people	23	10.6	<i>Total</i>	<i>216</i>	<i>100</i>
40 people +	62	28.7			

Table 3.
Relationship analysis
between variables

Variables	\bar{X}	S.S.	1	2	3
Strategic agility	37,347	104,207	1		
Firm performance	37,164	112,201	0.858**	1	
Organizational innovation	36,495	110,740	0.819**	848**	1
Note(s): **Significant at $p < 0.01$ level					

- (2) There should be a statistically significant relationship between the independent variables and the intermediate variable.
- (3) There should be a statistically significant relationship between the intermediate variable and the dependent variable
- (4) When the independent variable and the intermediate variable are included in the model, and if there is no meaningful relationship between the independent variable and the dependent variable, “full mediation” effect occurs. If the relationship between the independent variable and the dependent variable decreases, this is called “partial mediation”.

Whether the intermediary variables are partially or fully mediated in the mediation model will be decided when these four conditions are fulfilled.

In the first step, the effect of strategic agility, which is an independent variable, on FP ($\beta = 0.895$; $p < 0.001$), which is a dependent variable, is positive and significant (details are shown in Figure 5). Model fit values are $\chi^2/\text{df} = 2.368$; $p = 0.00$; GFI = 0.9301; AGFI = 0.848; TLI = 0.954; CFI = 0.962; RMSEA = 0.078; it is an indication that model suitability is within acceptable limits (shown in Table 4).

In the second step, the effect of strategic agility, which is the independent variable, on the organizational innovation ($\beta = 0.854$; $p < 0.001$), which is the mediating variable, is positive and significant (details are shown in Figure 6). Model fit values are $\chi^2/\text{df} = 1.976$; $p = 0.00$; GFI = 0.898; AGFI = 0.854; TLI = 0.958; CFI = 0.964; RMSEA = 0.0670; it is an indication that model suitability is within acceptable limits (shown in Table 5).

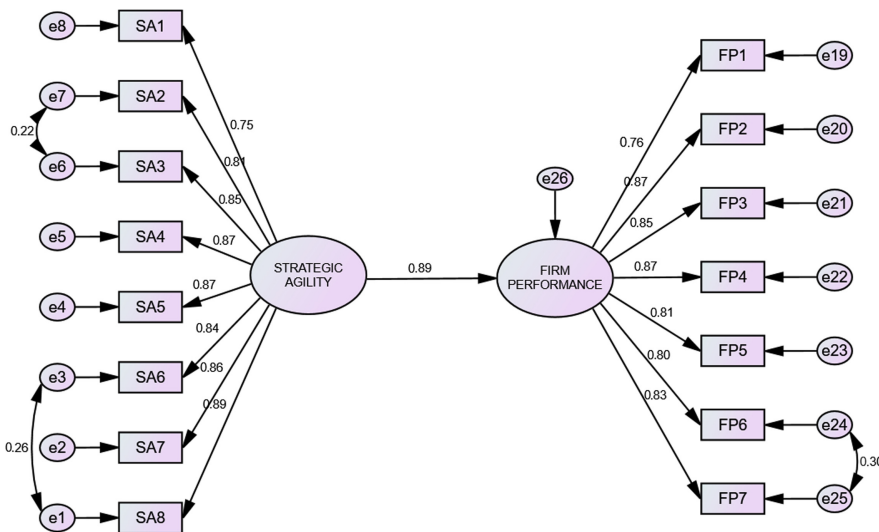


Figure 5.
Strategic agility and
firm performance
impact hypothesis test

			Estimate	S.E.	C.R.	P
Firm_Performance	<—	Strategic_Agility	0.895	0.058	12,737	***

Note(s): *** $p < 0.001$, S.E. (Estimate Standard Error), C.R. (Critical Ratio)

Table 4.
Strategic agility and
FP impact hypothesis
test results

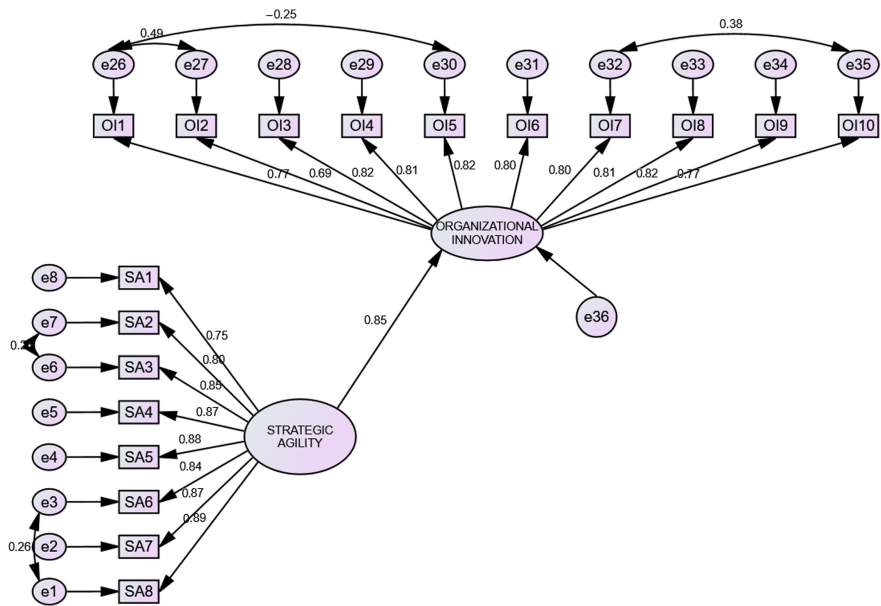


Figure 6.
Organizational
innovation and
strategic agility impact
hypothesis test

Table 5.
Organizational
innovation and
strategic agility impact
hypothesis test results

		Estimate	S.E.	C.R.	P
Organizational_Innovation	<— Strategic_Agility	0.854	0.064	12,250	***

Note(s): *** $p < 0.001$, S.E. (Estimate Standard Error), C.R. (Critical Ratio)

In the third step, the effect of organizational innovation, which is the mediator variable, on FP ($\beta = 0.898$; $p < 0.001$), which is the relative variable, is positive and significant (details are shown in Figure 7). Model fit values are: $\chi^2/\text{df} = 1.636$; $p = 0.00$; GFI = 0.905; AGFI = 0.870; TLI = 0.9730; CFI = 0.978; RMSEA = 0.054; it is an indication that model suitability is within acceptable limits (shown in Table 6).

In the fourth step, when the independent variable strategic agility, organizational innovation, which is the intermediary variable, and company performance, which is the dependent variable, are included in the model, it is seen that the effect of strategic agility on FP ($\beta = 0.485$; $p < 0.001$) is positive and significant. In addition, as demonstrated in the first step, the effect of strategic agility on FP ($\beta = 0.895$; $p < 0.001$) appears to decrease significantly after the inclusion of the intermediary model ($\beta = 0.485$; $p < 0.001$) (details are shown in Figure 8). In this case, it is seen that organizational innovation plays a “partial mediation” role on the impact of strategic agility on firm performance. Model fit values are $\chi^2/\text{df} = 1.901$; $p = 0.00$; GFI = 0.889; AGFI = 0.899; TLI = 0.948; CFI = 0.954; RMSEA = 0.065; it is an indication that model suitability is within acceptable limits (shown in Table 7).

5. Conclusion

In the study carried out, it was observed that firms’ strategic agility perception (3.73), firms’ performance perception (3.71) and organizational innovation perception (3.64) in our sample were high. Particularly, it is conceived that firms act consciously to adapt to turbulent

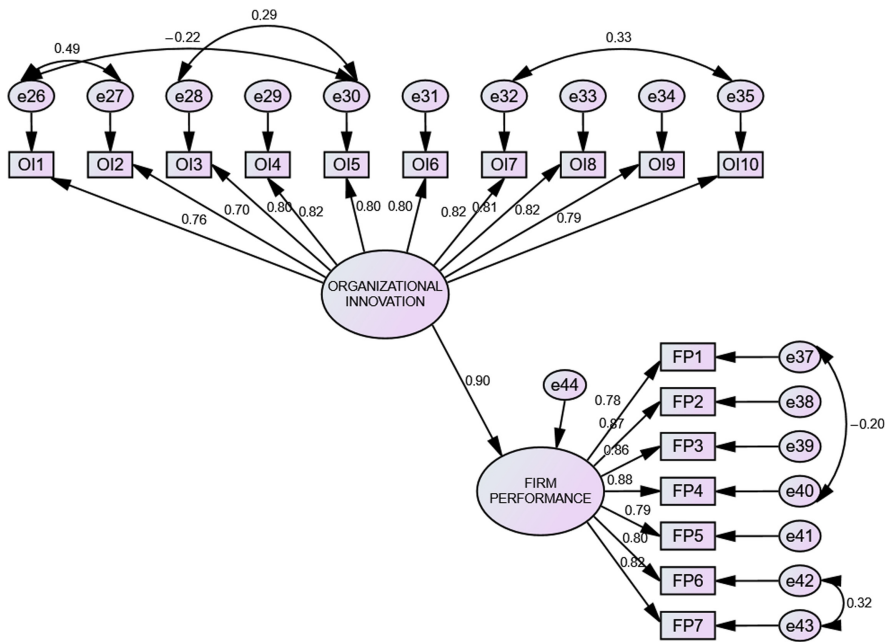


Figure 7.
Firm performance and
organizational
innovation impact
hypothesis test

		Estimate	S.E.	C.R.	P
Firm_Performance	<— Organizational_Innovation	0.898	0.076	11,128	***

Note(s): *** $p < 0.001$

Table 6.
FP and organizational
innovation impact
hypothesis test results

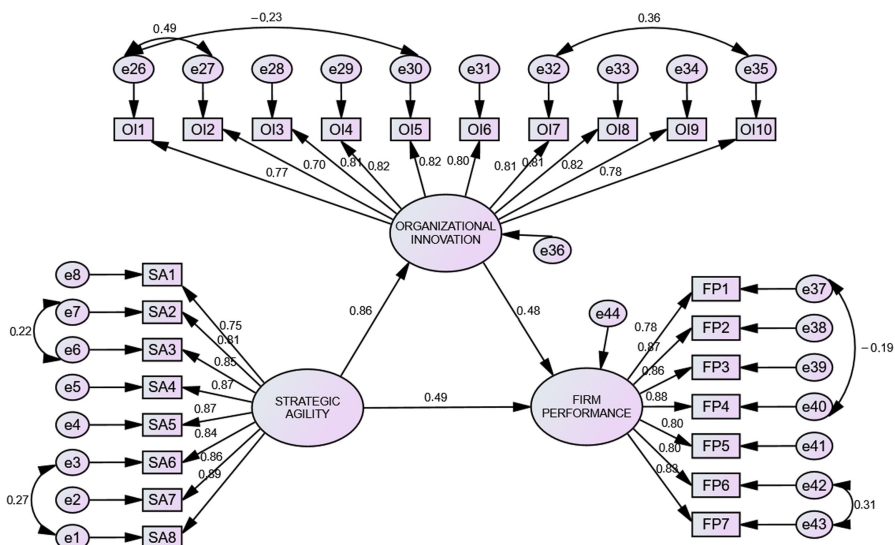


Figure 8.
Mediation impact
hypothesis test

Finally, the results of our intermediary model show that organizational innovation is an important mediation mechanism in which strategic agility contributes to firm performance. It shows how strategic agility affects firm performance, not just directly but also, in relation to the important role of including organizational innovation in the relationship between strategic agility and firm performance. Kohtamäki *et al.* (2020) put forward the role of innovation for the effect of strategic agility on firm probability. Clauss *et al.* (2019) also reveal the positive impact of strategic agility on FP and they indicate that innovation is an important mediator on the underlying relationship. In a study administered on firms operating information technology, Lungu (2020) determines the role of innovation for the effect of strategic agility on firm performance. Similarly, Ravichandran (2018) puts forward that strategic agility may have an impact on increasing FP through improving competitiveness

			Estimate	S.E.	C.R.	<i>P</i>
Organizational_Innovation	<—	Strategic_Agility	0.855	0.064	12,191	***
Firm_Performance	<—	Strategic_Agility	0.485	0.067	6,133	***
Firm_Performance	<—	Organizational_Innovation	0.478	0.077	5,825	***
Note(s): *** <i>p</i> < 0.001						

Table 7.
Mediation impact
hypothesis test results

and innovation. Using the dataset of communication- and technology-focused firms, Djaja and Arief (2015) argue that the impact of strategic agility on FP is through business model innovation. Further studies may concentrate on mediating the effect of absorptive capacity (Kale *et al.*, 2019), organizational culture (Arokodare *et al.*, 2019), improvisational capabilities (Cunha *et al.*, 2020), supply chain management (Suradi *et al.*, 2020) and strategic sensitivity (Junni *et al.*, 2015) for the impact of strategic agility on firm performance.

The research has several limitations due to reasons such as financial, accessibility and time factors. The random sampling method was used when sampling data. The random sampling method provides benefits in terms of easy access to the participants and low cost. However, this method creates a sample limitation for the study. At the same time, the application of the research only in Sakarya-organized industries creates context limitations in terms of generalizing the results of the research to other provinces. In addition, limited studies on strategic agility, FP and organizational innovation in the literature limit the comparison of findings with other studies.

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