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Analysis of Innovation and Performance Relationships of Companies Serving in the Information and Communication Sector

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ABSTRACT **Objective.** Explorer the relationship between strategic orientation, Porter's generic competitive strategy, innovative capacity of firm, and products technical performance in the Turkish ICT —Information and Communication Technology— sector. **Methodology.** This study employed a quantitative research design in which 573 questionnaires applied to people who work in various ICT companies located in Turkey. The research data were examined using mediation effect and path analysis techniques. SmartPLS version 3.2 was used for the abovementioned analyses. **Results.** The findings revealed a positive and significant correlation between strategic orientation with the innovative capacity of firms and the products technical performance. The results also indicate that Porter's generic competitive strategies play a mediating role in the relationships between strategic orientation, innovative capacity of firms, and products technical performance. **Conclusions.** The importance of integrating strategic orientation and competitive strategies in order to innovative capacity of firms or products technical performance is concluded, particularly in ICT companies.

KEY WORDS Strategic orientation, Competitive strategies, Firm innovativeness, Product technical performance, Turkish ICT sector.

Análisis de las relaciones entre innovación y rendimiento de las empresas del sector de la información y la comunicación

RESUMEN **Objetivo.** Explorar la relación entre la orientación estratégica, la estrategia competitiva genérica de Porter, la capacidad innovadora de la empresa y el rendimiento técnico de los productos en el sector turco de las tecnologías de la información y la comunicación —TIC—. **Metodología.** Para llevar a cabo esta investigación se empleó un diseño cuantitativo en el que se recogieron 573 cuestionarios aplicados a personas que trabajan en diversas empresas TIC ubicadas en Turquía. Los datos de la investigación se examinaron mediante técnicas de efecto de mediación y análisis de trayectorias. Los análisis mencionados se realizaron con la versión 3.2 de SmartPLS. **Resultados.** Los resultados mostraron una correlación positiva y significativa de la orientación estratégica con la capacidad innovadora de las empresas y el rendimiento técnico de los productos. Los resultados también indican que las estrategias competitivas genéricas de Porter desempeñan un papel mediador en las relaciones entre la orientación estratégica, la capacidad innovadora de las empresas y el rendimiento técnico de los productos. **Conclusiones.** Se concluye la importancia de integrar la orientación estratégica y las estrategias competitivas para mejorar la capacidad innovadora de las empresas o el rendimiento técnico de los productos, especialmente en las empresas del sector de las TIC.

PALABRAS CLAVE orientación estratégica, estrategias competitivas, innovación empresarial, rendimiento técnico de los productos, sector turco de las TIC.

Análise das relações entre inovação e desempenho de empresas do setor de informação e comunicação

RESUMO **Objetivo.** Explore a relação entre a orientação estratégica, a estratégia competitiva genérica de Porter, a capacidade inovadora da empresa e o desempenho técnico dos produtos no setor turco de tecnologias de informação e comunicação —TIC—. **Metodologia.** Para a realização desta investigação foi utilizado um desenho quantitativo no qual foram recolhidos e aplicados 573 questionários a pessoas que trabalham em diversas empresas de TIC localizadas na Turquia. Os dados da pesquisa foram examinados por meio de técnicas de efeito de mediação e análise de trilha. As análises citadas foram realizadas com SmartPLS versão 3.2. **Resultados.** Os resultados mostraram uma correlação positiva e significativa da orientação estratégica com a capacidade inovadora das empresas e o desempenho técnico dos produtos. Os resultados indicam também que as estratégias competitivas genéricas de Porter desempenham um papel mediador nas relações entre a orientação estratégica, a capacidade inovadora das empresas e o desempenho técnico dos produtos. **Conclusões.** Conclui-se a importância de integrar a orientação estratégica e as estratégias competitivas para melhorar a capacidade inovadora das empresas ou o desempenho técnico dos produtos, especialmente nas empresas do setor das TIC.

PALAVRAS CHAVE orientação estratégica, estratégias competitivas, inovação empresarial, desempenho técnico de produtos, setor turco de TIC.

Introduction

In recent years, with the increasing speed of technological change and development, and businesses that have to survive in the global competitive environment, they have to act more strategically than their other competitors in order to maintain their competitive advantages. It is stated that businesses that can notice the rapid changes in the demands or demands of the consumers before their competitors can gain a competitive advantage against others by rapidly reorganizing their production, marketing and managerial processes (Porter, 1980). In order for these enterprises to continue their existence and competitive advantage, they constantly strive to follow the trends in the current markets and changing environmental conditions; in other words, they need to have strategic directionality. The reason why strategic directionality is seen as one of the most important factors affecting the success of the enterprises emerges at this point. Strategy can be seen as the process of adapting functional strategies to each other and corporate strategy to the demands, opportunities and risks created by the external environment of a firm (Acur, Kandemir and Boer, 2012). While strategy indicates the long-term direction of an institution, orientation refers to a general or enduring direction of thought, disposition or interest. Masa'deh et al. (2018) stated that strategic directionality is the primary way of understanding the actions taken by the firm to increase profitability, financial performance or gain competitive advantage. Analysis of strategy formulation and implementation processes seems to have become an important issue in strategic management and business policy studies for more than three decades. Strategically oriented companies are constantly obliged to produce new products and services in order to gain a competitive advantage against their competitors in environmental conditions. In this respect, firm innovation and product technical performance can be considered as an important strategy that should be implemented for businesses in a competitive market. When the related literature is examined, it is seen that in the first studies on strategic directionality, it deals with how companies react to the rapidly changing competitive environment. In these studies, it is seen that various typologies are suggested for functionalizing the concept of strategic stance and for the strategic orientation of companies or general competitive strategies (Avcı, Madanoglu and Okumus, 2011). Among these studies, Miles et al. (1978) is one of the most important strategy typologies that define the relationship between the strategic orientation of companies and their performance, probably the best known and widely used. This typology was subsequently studied and found strong support, particularly in developed countries, industries and contexts. According to this typology, firms follow one of four strategic orientations, namely researcher, advocate, analyzer and reactor, to achieve firm performance. However, although there are many studies examining strategic directionality and financial and non-financial performances in the current literature, Information Communication and Technology —ICT— sector companies, which follow all or a few of these four strategic orientation types, are one of the competitive strategies in achieving the targeted innovation and product technical performance results. It is also seen that researches to answer the question of whether it is effective or not are insufficient. Therefore, in this study, which has been operating in Turkey and in the ICT sector adopts the strategic orientation of the company, cost leadership, differentiation strategies, firm innovativeness and product technical performance of the company has been examined the relationship between. In addition, the role of competitive advantage strategies in the relationship between strategic directionality and firm innovativeness and product technical performance is analyzed. Our expectation, it is that competition strategies have a mediator role in these relationships. In the remainder of the article, literature review is made about our variables, hypotheses are formed, research model and methodology are presented, experimental results obtained from our analysis are presented and results are presented.

Literature and hypothesis development

Strategic Orientation

Porter (1980) claims that the success of an organization depends on an external (environment) and internal (strategy, structure, processes, and ideology) adaptation process. This process starts by adapting the organization to the market in order to meet or help shape customers' current and future needs. Strategy is defined by this adaptation process (Martins et al., 2014). Strategic Orientation is defined as the special approach that a company takes to create appropriate behaviors for superior and continuous performance. This concept reflects managers' perceptions of the competitive environment and their reactions to environmental conditions. The correct fit between the firm's strategic orientation and its physical, human and organizational resources is its ability to achieve superior performance (Ferraresi et al., 2012). As a strategic choice, strategic orientation can provide a resource that helps firms develop dynamic capabilities in rapidly changing environments. Strategic orientation has stated that it guides the way a firm interacts with external organizations such as customers, competitors and technology, and its strategic orientation has been defined as three subgroups as customer, competitor, and technology directionality (Zhou and Li, 2010). Early studies on strategic orientation discuss how firms react to rapidly changing competitive environments. In these studies, it is observed that the most frequently discussed sub-concepts as components of strategic orientation are Entrepreneurial, Market, Technology and Learning orientations (Bulut, Alpkan and Yılmaz, 2009). Similarly, strategic orientation is expressed as a combination of progressive decision-making, social responsibility, and organicity variables (Aminu and Shariff, 2014). Within the scope of the research, the effects of strategic orientation as an independent variable on cost leadership, differentiation strategy, firm innovation and product technical performance are examined.

Generic Competitive Strategies

There are three different approaches that address the general competitive strategies (differentiation, cost leadership, focus) of Porter (1980, 1985). Porter (1980) argued that the three general strategies differ in dimensions other than functional differences and that different resources and skills are required to successfully implement them.

In the Cost Leadership Strategy, it is said that a company that finds and uses all cost advantage resources and aims to be a multi-cost producer in the sector follows a sustainable cost leadership strategy (Tanwar, 2013). The basic principle here is to reduce the cost of all actions in order of importance, especially starting from unnecessary actions. Thus, the gap between prices and costs in the market will be longer and the firm will gain competitive advantage by earning high income and profit. Porter (1980) emphasizes that this strategy should only be implemented if a firm has or is capable of achieving the lowest production costs in an industry.

In the Differentiation Strategy, the firm chooses one or more specific features in order to be unique in its sector with some features valued by most buyers and is positioned to meet these needs. The ideal approach is for the firm to differentiate itself in various dimensions (Kurt and Zehir, 2016). The basic principle of this strategy is to channel customer choices to their goods and services by doing different things than each competitor. In cases where standard goods and services cannot meet customer needs, companies have to find different solutions to the special needs of customers. In addition, the differentiation strategy aims to create a competitive advantage by offering unique products that are characterized by valuable features such as quality, innovation and customer service (Prajogo, 2007).

According to Porter (1985), each of a competitive strategy is a completely different way of creating a sustainable competitive advantage. Therefore, a firm must make a choice between cost leadership and differentiation strategies or else it will be stuck in the middle without a coherent strategy. In this study, the first two of the general competitive strategies pointed out by Porter, namely

differentiation and cost leadership strategies, are discussed and the effect of these strategies on the relationship between strategy orientation and firm innovation and technical product performance will be investigated.

Firm Innovativeness

Firm innovativeness is a "desire to change", that is, openness to new ideas as an aspect of a firm's culture. Such a mix of input and output measures is used as a set of behaviors, products, processes, markets, and strategic components in the conceptualization of innovation (Ferraresi et al., 2012). For organizational innovation is required: (i) Changes in the structure and processes of an organization due to the implementation of new management and working concepts and practices such as teamwork in production, supply chain management or quality management systems; (ii) new management practices, new organization, new marketing concepts and new corporate strategies and (iii) Definitions of applying a new organizational method in business practices, workplace organization or external relations are given (Camisón and Villar-López, 2014). Among the determinants of firm innovation, firm strategic orientations —the strategic directions applied by a firm to generate appropriate behaviors to achieve superior performance— are key predictors of firm innovation (Tho, 2019). In the research, firm innovativeness is examined as the dependent variable. The effects of strategic orientation, cost leadership and differentiation strategy on firm innovation are examined.

Product Technical Performance

Cooper and Kleinschmidt (2007) stated the five factors of new product development in performance as full new product development process and plans, specific new product development strategy, corporate culture, and participation of high-ranking supervisors in new product development. Olson, Walker Jr. and Ruekert (1995) suggested that professional managers should consider criteria such as new product development, new product quality, new product design, design satisfaction, time management in profit and loss balance, successful sales target, budget control and design of special products. Oliver, Dostaler and Dewberry (2004) explained the new product development performance with cost, delivery time, external and internal quality, and program follow-up. Souder and Song (1997) stated that correct product design and market selection will affect new product development performance and emphasized that companies should perceive the uncertainty of the market. In addition, they recommended performance scales such as the speed of launching the new product, the harmony between development cost and budget, sales rate, market share, contribution to corporate image, contribution to improving corporate techniques, and satisfaction of employees, auditors and customers (Liu and Tsai, 2009). In this context, product technical performance is examined as a dependent variable in the research.

The Relationship between Strategic Orientation and Cost Leadership and Differentiation Strategies

In research examination of the relationship between strategic orientation and competitive strategies and bank performance, a positive and significant relationship was found between strategic orientation and cost leadership and differentiation strategies. In addition, it is stated that competitive strategies have a mediator (moderator) effect in the relationship between strategic orientation and bank performance (Jassmy and Bhaya, 2016). It has been found that entrepreneurial orientation has a significant and positive moderator effect on the relationship between competitive strategies and firm performance (Rua, França and Ortiz, 2018). For Galbreath et al. (2020), and Zehir, Can and Karaboga (2015) based on these studies, it can be expected that the performance of the firm will increase if a firm can successfully implement the Strategic orientation and competitive strategies, which can be applied separately, simultaneously and together. For this reason, it is seen that there is a statistically significant relationship between different types of orientations expressed under the name of strategic orientation and Porter's competitive strategies. Therefore, the following hypothesis can be put forward:

H1: Strategic Orientation has a positive effect on the Cost Leadership Strategy.

H2: Strategic Orientation has a positive effect on the Differentiation Strategy.

The Relationship between Strategic Orientation and Firm Innovativeness

The link between innovation and strategy is essential for effective innovation management (Vicente, Abrantes and Teixeira, 2015). In the study on the relationship between strategic orientation, innovation and performance, it is seen that the strategic directionality that provides competitive advantage has an important and significant effect on the innovative structure of the enterprises and there are strong opinions that the innovations increase the business performance (Oflazoglu and Koçak, 2012). In another study, it has been shown that proactive market orientation, proactive entrepreneur orientation and technology orientation are positively associated with firm innovativeness capability (Tutar, Nart and Bingöl, 2015). In a study conducted by Alhakimi and Mahmoud (2020) on SME, it was found that market, customer and supplier orientations have a positive and significant relationship on firm innovation. In addition, Yousaf et al. (2020) found that firm innovation acts as a mediator between technology orientation and firm performance. From this point of view, it can be stated that there is a very close relationship between strategic orientation and company innovativeness, so that it must have a strategic orientation in order to reach sustainable performance by finding new ideas, products, processes and ways. Therefore, the following hypothesis can be put forward:

H3: Strategic Orientation has a positive effect on Firm Innovativeness.

The Relationship between Strategic Orientation and Product Technical Performance

Past research shows that the true value of strategic orientation in the new product development process is its potential to improve the organization's performance in the market, and that strategic orientation is a critical determinant of new product performance (Song and Parry, 1997). In assessing product performance, here attention needs to be paid to differences in the various dimensions measured, for example, variations in customer tastes, expectations of technical performance, overall profitability and/or sales. It shows that a firm that wants to develop a superior innovation in competition must have a strong technological orientation (Archer, Jeong and Hong, 2007). Wimalachandra, Frank and Enkawa (2014) research on new product development, strategic orientation and product quality did not find a significant relationship with the product quality of competitor and technology orientation, but a positive and significant relationship was found between manufacturing orientation and product quality. Aloulou (2018) stated that market, entrepreneurial and technological orientation have a statistically positive and significant relationship on new product development performance. In conclusion, these findings show that there are not many clear and numerous empirical studies on the direct impact of various dimensions of strategic orientation on product technical performance. Therefore, we put forward the following hypothesis regarding the role of strategic orientation as a composite variable on product performance:

H4: Strategic Orientation has a positive effect on Product Technical Performance.

The Relationship between Generic Competition Strategies and Firm Innovativeness

Companies can gain competitive advantage at the economy scale by using cheaper raw materials, mass production and distribution, R&D, service, sales and marketing activities, and effective systems to reduce the cost of human resources and minimize costs (Amentie and Sogbossi, 2017). The planning of the product range is influenced not only by the internal differentiation of technical product features, but also by the market requirements, the competitive situation and the strategic orientation of the company. Bayraktar et al. (2017) found a positive and significant relationship between cost leadership and differentiation strategies and innovation. In addition, it was stated that innovativeness has a mediator effect on the relationship between competitive strategies and firm performance. Amentie and Sogbossi (2017) stated that there is a positive and significant relationship between generic competitive strategies and product innovation success, which is considered a measure of firm innovation in a sense. From this point of view, a company should

be expected to implement a differentiation strategy in order to present new products, services, ideas and patents before its competitors in the market, and a cost leadership strategy to produce them at a lower cost than their counterparts in the market. In this context, applications of competitive strategies will force or encourage this company to be more innovative than its competitors in the sector. For this reason, the hypotheses below are formed:

H5: Cost Leadership Strategy has a positive effect on Firm Innovativeness.

H7: Differentiation Strategy has a positive effect on Firm Innovativeness.

The Relationship between Generic Competition Strategies and Product Technical Performance

Firms can achieve sustainable competitive advantage thanks to low cost and products with equivalent or superior performance and different technical features compared to their peers (Coeurderoy and Durand, 2004). In fact, these companies can achieve higher differentiation by increasing the technical performance of their products in response to the changing market environment. Thanks to the technological capabilities and differentiation strategy of a technologically oriented company, it improves product quality, adds features and value, and increases product performance, thus competitive advantage (Porter, 1985).

Basbeth et al. (2009) found that individual entrepreneurship orientation has a moderator role in the relationship between differentiation strategy and firm performance, as well as cost leadership strategy and firm performance. With a different approach, it has been found that competitive strategies have a moderator effect in the relationship between entrepreneurial orientation and firm performance — cost leadership has a negative effect, and differentiation strategy has a positive effect (Galbreath et al., 2020). While a positive and significant relationship was found between product quality, which can be regarded as another expression of product performance, and differentiation strategy, it was observed that there was no significant relationship with cost leadership. This highlights the effect of differentiation strategy in determining quality performance (Prajogo, 2007). Kharub, Mor and Sharma (2019) did not find a significant relationship between cost leadership and product quality and process improvement performance, but found that quality management has a moderator effect in the relationship between cost leadership and this performance. In the light of these arguments, this study suggests that competitive strategies have a positive effect on product technical performance. Therefore, the following hypotheses have been put forward:

H6: Cost Leadership Strategy has a positive impact on Product Technical Performance.

H8: Differentiation Strategy has a positive effect on Product Technical Performance.

The Generic Competitive Strategies Effects in the Relationship between Strategic Orientation and Firm İnnovativeness and Product Technical Performance

Galbreath et al. (2020) found that competitive strategies act as a moderator effect on the relationship between entrepreneurial orientation and firm performance. Jassmy and Bhaya (2016) found that competitive strategies have a moderating effect on the relationship between strategic orientation and bank performance. In another study, it was found that competitive strategies have a mediator (moderator) effect between entrepreneurial orientation and export performance (Rua, França and Ortiz, 2018). Zehir, Can and Karaboga (2015) stated that differentiation strategy has a mediator effect on the relationship between entrepreneur orientation and firm performance and innovation performance. In addition, it has been found that differentiation strategy plays a mediator role in the relationship between entrepreneur orientation and innovativeness performance. Bayraktar et al. (2017) found that innovation plays a mediator role between competitive strategies and firm performance. Liu and Atuahene-Gima (2018) stated that competition strategies have a moderator role between dysfunctional competition and product innovation performance. In another study, it was revealed that the effect of international entrepreneurial orientation

on international performance increases with the adoption of a competitive strategy and that innovation is a necessary condition for competitive strategy to create a mediator effect (Hernández-Perlines, Moreno-García and Yañez-Araque, 2016). Therefore, the following hypotheses have been put forward:

H9: Cost Leadership Strategy mediation has variable effect on the relationship between Strategic Orientation and Firm Innovativeness.

H10: Cost Leadership Strategy mediation has variable effect on the relationship between Strategic Orientation and Product Technical Performance.

H11: Differentiation Strategy mediation has variable effect on the relationship between Strategic Orientation and Firm Innovativeness.

H12: Differentiation Strategy mediation has variable effect on the relationship between Strategic Orientation and Product Technical Performance.

Methodology

The SmartPLS 3.2 program was used for factor, PLS-SEM path and mediation effect analysis of surveys collected from 573 employees as part of the study. Descriptive analysis was used in demographic information. In the questions using Likert scale, factor analysis and reliability and validity analysis were performed. Correlation analysis in examining the relationships between variables; path analysis was used to test the hypotheses. A preliminary test of 53 people was conducted before the full use of the scale was carried out, and the scale was rearranged because some expressions were not understood. 573 white-collar employees working in different departments answered the questionnaire in accordance with the criteria. 573 people are sufficient size for the main mass size and 5 % significance level.

The SEM model for path analysis has been established in the application section. The highlight of PLS-SEM is that the method allows researchers to predict many structures, indicator variables and structural pathways and complex models without applying distribution assumptions on data (Hair et al., 2019). The reason for using PLS-SEM in this study is that the prediction of the dependent variable is focused.

Common Method Bias —CMB— problem may be encountered when measuring different dimensions on the same people. In order to prevent this, anonymity was provided in the questionnaire application, the required time was given to the participants and the number of questions was kept at a reasonable level. Consistent PLS Algorithm tab is used for CMB control in SmartPLS program. All variables are included in the model as dependent variables, others as independent variables, also the VIF values for the Inner Model have been examined. Since all of these values are less than 3.3, it has been revealed that there is no CMB problem.

The Purpose of Research

In this study, companies operating in the information and communication sector have been preferred. The reason for this is that product innovation activities and competition occur intensely within this sector. The reason for the selection of white-collar employees (administrative personnel) for the sample population is that they play a role in both product innovation and product technical performance. In addition, it has authority and responsibilities in the implementation of competitive strategies. Therefore, the purpose of this research it is the evaluation and analysis of service companies in terms of both strategic orientation and innovation and performance. To test the propositions, a field survey was conducted using a questionnaire. The main body of the research consists of companies operating in the information and communication sector. These companies include official and private service providers. An online questionnaire was prepared and sent to the company employees, and when the sufficient number was obtained, the survey response time was ended. Participation in the survey was done on a voluntary basis. The research model developed within the context of this study is presented in Figure 1.

Measures (Scales)

Survey questions consist of questions representing 5 variables. For the Strategic

Orientation scale, the 5-point Likert scale questions used in the study by Grimmer et al. (2017) were included in the analysis after being subjected to factor and reliability analysis. The scale developed by Lumpingan (2018) was used for the Cost Leadership Strategy variable. Differentiation Strategy, Islami et al. (2020) the scale developed was used. In measuring Firm Innovativeness, Ozdemir et al. (2020) the scale developed was used. The Product Technical Performance scale developed by Lau, Yam and Tang (2011) was used.

Findings

573 participants answered the questionnaire in accordance with the criteria. 449 (78.4 %) male and 124 (21.6 %) female white collar responded to our survey. While 210 of the participants (36.7 %) are between the 30-40 age group; 285 of them (49.7) are in the 41-50 age group. The number of managers over the age of 51 is 78 (13.6 %). While 131 (22.9 %) of the employees who answered the questionnaire are college graduates, 366 (63.9 %) of them are university graduates; 69 (12 %) of them have a master's degree, 7 (1.2 %) of them have a doctorate degree.

Research Framework

Based on the literature review, a research model covering the variables SO, CLS, DS, FI and PTP was created. This model is given in Figure 1.

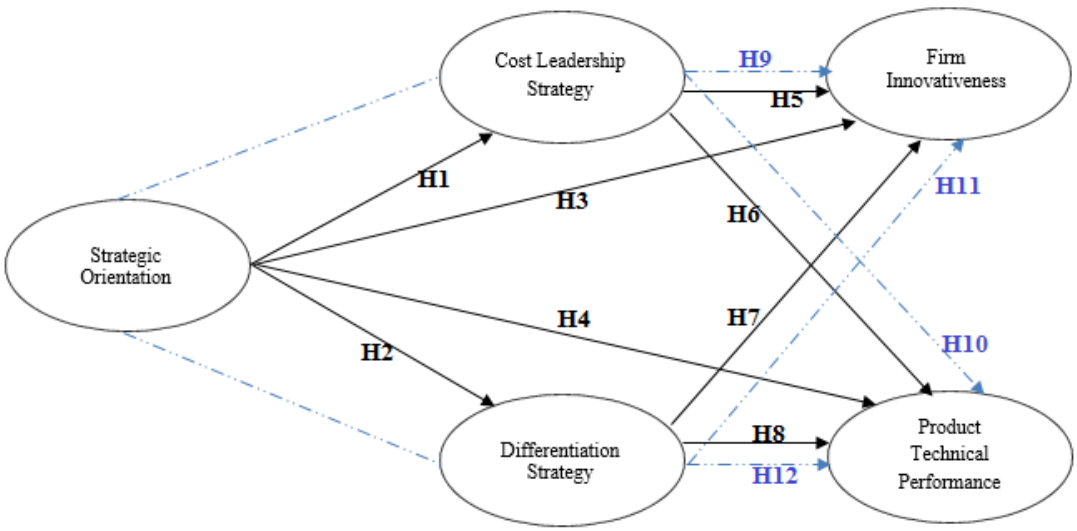

Figure 1. Research Model. Source: author own elaboration.

H1-H8 hypotheses were created to reveal the existence of a direct relationship between variables. H9-H12 hypotheses were established to reveal the effects of the moderator. Before moving on to the hypotheses part of the study, the factor analysis results of the current scale are given.

The first stage of PLS-SEM analysis starts with the establishment of the structural model. There are two types of models in SEM, namely the Inner Model (Structural), which shows the relationship between dependent and independent variables, and the Outer Model (Measurement), which presents hidden variables and their observable indicators. The Outer model created for the study is presented in Figure 2. Figure 2 shows five variables. Arrows between variables provide information about the direction of the relationship.

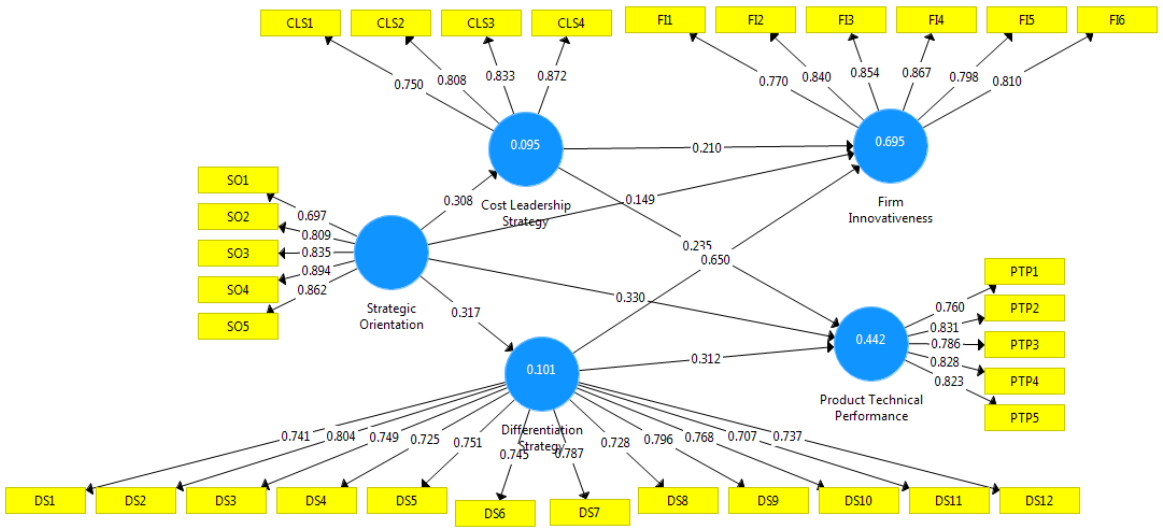

Figure 2. PLS-SEM path analysis. Source: author own elaboration.

The arrows between the 5 factors in the model show the alleged direction of the relationship. Each of the measurements is linearly related to the factors, and the strength of this relationship is determined from the factor loadings (DeCoster, 1998). These loads can be interpreted as standard regression coefficients. The values written in the arrows between the factors give the path coefficients. Figure 2 also gives the factor loads, path coefficients and R square values between hidden variables. Arrows between factors and statements show the connection between factor and expressions. The values written above the arrows show the factor loadings. The values written in the factor indicators are R square values.

Results

Explanatory and confirmatory factor analysis was performed to investigate the construct validity of the scale. The fact that the Kaiser-Meyer-Olkin sample fit value is 0.933 and the significance level of Bartlett's test of sphericity is 0.000 (for $p \leq 0.05$) indicates that the data are suitable for factor analysis. In the pretest part of the study, our variables prepared according to the 5-point Likert scale were measured with a 48-statement scale form. As a result of the factor analysis, 16 questions were excluded from the scale since they did not show a factor distribution and fell into different factors by reducing the reliability. The remaining 32 questions are distributed according to 5 factors. The expressions subjected to factor analysis together with their factor loadings and their factors are given in Table 1.

Table 1. Factor analysis results of expressions

Factors	Items	O.L.	O.W.	VIF	T Stat.
Firm Innovativeness	FI1	0.770	0.203	1.861	11.960*
	FI2	0.840	0.201	2.981	20.940*
	FI3	0.854	0.211	3.276	24.782*
	FI4	0.867	0.204	2.955	25.373*
	FI5	0.798	0.193	2.387	19.185*
	FI6	0.810	0.203	2.387	19.564*
Differentiation Strategy	DS1	0.741	0.090	2.481	13.621*
	DS2	0.768	0.106	2.696	14.640*
	DS3	0.707	0.100	2.001	11.355*
	DS4	0.737	0.112	2.062	14.318*
	DS5	0.804	0.115	2.618	20.791*
	DS6	0.749	0.128	2.538	14.859*
	DS7	0.725	0.121	2.623	12.305*
	DS8	0.751	0.125	2.491	14.241*
	DS9	0.745	0.102	2.694	12.486*
	DS10	0.787	0.106	3.267	18.051*
	DS11	0.728	0.106	3.067	12.895*
	DS12	0.796	0.116	3.889	18.785*
Cost Leadership Strategy	CLS1	0.750	0.238	2.486	8.884*
	CLS2	0.808	0.285	2.808	11.460*
	CLS3	0.833	0.369	2.383	21.914*
	CLS4	0.872	0.326	2.754	31.409*
Product Technical Performance	PTP1	0.760	0.205	1.836	12.207*
	PTP2	0.831	0.295	1.986	23.203*
	PTP3	0.786	0.236	1.924	14.538*
	PTP4	0.828	0.247	2.104	20.954*
	PTP5	0.823	0.255	2.047	14.752*
Strategic Orientation	SO1	0.697	0.201	1.559	10.493*
	SO2	0.809	0.270	1.934	23.557*
	SO3	0.835	0.247	2.403	18.276*
	SO4	0.894	0.242	3.421	34.973*
	SO5	0.862	0.254	2.694	28.008*

Note: O.L.: Outer Loading; O.W.: Outer Weight; VIF: Value Inflation Factor; *: p value<0.05.

Source: author own elaboration.

Outer loadings determines indicator reliability value. When the squares of these loads are taken, the indicator reliability value is obtained. Factor loads over 70 % are preferred (Hulland, 1999). Factor loadings less than 0.70 are not suitable for the program, but an expression under the Strategic Orientation factor has a factor load of 0.697. This statement was not omitted because it did not make a significant difference to the reliability and validity of the scale. If Table 1 is examined, it can be seen that all Factor Weights values are positive. This result may indicate that there are no connectivity problems such as Multilinearity. Whether these factor loadings are also important for latent variables need to be tested. T values were checked for this. T values greater than 1.96 at the 5 % significance level indicates that the loads are significant for the variables. The Variance Inflation Factor —VIF— value is a criterion of whether one independent variable, and the other independent variable have a multiple linearity problem in the regression model (O'brien, 2007). If VIF values are below 5, there is no multi-linearity problem. Details of these values are presented in Table 1.

Construct Reliability and Validity values obtained for the research model are given in Table 2. The reliability coefficient it is defined as the intrinsic consistency of the measurement that takes into account the average relationship between questions. The Cronbach Alpha coefficient gives this intrinsic consistency. Measurements with a coefficient of 0.50 or higher are considered sufficient (Nunnally, 1978).

Table 2. Construct Reliability vs. Validity Values

Latent Variables	Number of Items	Cronbach's Alpha	rho_A	CR	AVE	Q Square (CCR)
CLS	4	0.836	0.854	0.889	0.667	0.055
DS	12	0.931	0.932	0.940	0.568	0.048
FI	6	0.905	0.905	0.927	0.679	0.457
PTP	5	0.866	0.874	0.903	0.650	0.274
SO	5	0.878	0.886	0.912	0.676	

Source: author own elaboration.

Cronbach Alpha coefficients greater than 50 % indicate that the scale has internal consistency. Another measurement that can be used as an internal consistency indicator is the rho_A coefficient. This scale shows whether factor items are reliable (Ringle et al., 2020; Dijkstra and Henseler, 2015). It is preferred that the rho_A coefficient is above 0.70. All of the values obtained for the scale are above 0.70. This result again shows that the scale is a consistent scale. Composite Reliability —CR— and Average Variance Extracted —AVE— values are criteria used to measure content validity. CR value is required to be above 0.70 for model reliability. AVE and CR values are calculated on factor loads. AVE convergent gives the validity value. To be able to say that the fit validity of the model is appropriate, the CR value should be 0.50 or higher (Alarcón and Sánchez, 2015). At the same time, the values calculated by taking the square roots of the AVE values must be the largest value of all the values in the correlation matrix by row and column. These results will be detailed while giving Fornell-Larcker criteria. If the Q Square value takes a value greater than 0 for any Endogenous variable, it is obtained that the PLS path model has an estimated significance level for this structure. For all cases, Q square values were obtained as greater than 0. Total Q square values for CCR are given in Table 2.

Discriminant validity values should also be given in order to comment on the scale. Table 3 shows Fornell Larcker criteria results, Heterotrait-Monotrait Ratio —HTMT— results and correlation values.

Table 3. Discriminant Validity and Correlation Values

	Fornell Larcker Criterion					Heterotrait-Monotrait Ratio			
Latent Variables	**CLS**	**DS**	**FI**	**PTP**	**SO**	**CLS**	**DS**	**FI**	**PTP**
CLS	0.817								
DS	0.455*	**0.754**				0.493			
FI	0.552*	0.793*	**0.824**			0.616	0.859		
PTP	0.479*	0.524*	0.511*	**0.806**		0.549	0.569	0.567	
SO	0.308*	0.317*	0.420*	0.502*	**0.822**	0.347	0.341	0.467	0.576

Source: author own elaboration.

According to Fornell-Larcker Criteria, if the value in the cell against which a latent variable is compared with itself has the highest value in the row and column in which it is located, it means that the parsing validity is provided. The values shown in bold colors are the criteria values obtained as a result of comparing each criterion with itself, and all values are the highest values of the row and column in which it is located. Numbers with (*) symbols in the table show the correlation coefficients between latent variables. One of the important values for Discriminant Validity is the HTMT values. If this ratio is greater than 0.90 (Gold, Malhotra and Segars, 2001), it means that Discriminant Validity could not be achieved. When the reference intervals are examined, it can be said that the prepared scale has reliability and validity values. With these results, it can be said that the scale has validity and reliability criteria.

After the appropriateness of the scale was revealed, the process of testing the hypotheses was started. In Table 4, path coefficient values showing the degree to which the structures in the model affect each other, t test results showing whether the values obtained are significant and p value values for this test are presented. Path coefficient values take values between -1 and +1. A positive value indicates that a variable has a positive effect on the other variable. If the value is negative, the variable has a negative effect on the other variable.

Table 4. Path coefficients and test results for hypotheses

H	Paths	Path Coefficient	T Statistics	P Values	Decision
H1	SO→CLS	0.308	2.929	0.004	Accept
H2	SO→DS	0.317	3.858	0.004	Accept
H3	SO→FI	0.149	2.243	0.025	Accept
H4	SO→PTP	0.330	3.371	0.001	Accept
H5	CLS→FI	0.210	3.295	0.001	Accept
H6	CLS→PTP	0.235	2.157	0.032	Accept
H7	DS→FI	0.650	12.049	0.000	Accept
H8	DS→PTP	0.312	3.402	0.001	Accept

Source: author own elaboration.

All path coefficient values were obtained positive. This situation shows that all the hypotheses are established correctly. However, first of all, it is necessary to look at whether the results are statistically significant. Relationships are meaningful if the test statistics values obtained from significance tests are greater than 1.96 (5 % level). All t statistics values were obtained above 1.96. In addition, since the p-value values are less than 0.05, all of the hypotheses can be accepted.

In the mediation variable analysis, the relationships between generic competitive strategies, strategic orientation, firm innovativeness and product technical performance have been examined. Table 5 shows the Specific Indirect Effect results taken from SmartPLS.

Table 5. Mediation Effect Results (a) path coefficient

H	Paths	Original Sample	Standard Deviation	T Stat.	P value	Decision
H9	**SO→CLS→FI**	0.095	0.033	2.879	0.004	Accept
H10	**SO→DS→FI**	0.206	0.056	3.687	0.000	Accept
H11	**SO→CLS→PTP**	0.102	0.040	2.550	0.011	Accept
H12	**SO→DS→PTP**	0.099	0.040	2.458	0.014	Accept

Source: author own elaboration.

Path coefficient results for Mediation Effect are given in Table 5. The existence of the mediation effect is tested with the first table. According to the path results obtained, the mediation effect hypotheses between H9-H12 were accepted. Table 6 gives the size of the mediation effect. VAF value is used for Mediation effect size. VAF measurement value method suggested by Nitzl, Roldan and Cepeda (2016). According to the method, the ratio of the indirect effect to the total effect gives the mediator effect size.

Table 6. Mediation Effect Results (b) Effect Sizes

H	Paths	(a)	(b)	(c)	VAF	Decision
H9	**SO→CLS→FI**	0.308	0.210	0.149	0.303	Partial
H10	**SO→DS→FI**	0.317	0.650	0.149	0.580	Partial
H11	**SO→CLS→PTP**	0.308	0.235	0.330	0.378	Partial
H12	**SO→DS→PTP**	0.317	0.312	0.330	0.230	Partial

Source: author own elaboration.

If VAF values are below 20 %, zero mediator effect is mentioned, while VAF value between 20 and 80 % is partial and more than 80 % means full mediator effect (Hair et al., 2016).

Discussion

This research emphasizes the relationship between strategic orientation, cost leadership and differentiation strategies, firm innovation and product technical performance. According to the analysis results, there is a statistically positive and significant relationship between strategy orientation and cost leadership and differentiation strategies. In this respect, the H1 and H2 hypotheses are supported. These results are consistent with the findings in the studies of the relevant literature (Galbreath et al., 2020; Rua, França and Ortiz, 2018). At the same time, there is a statistically positive and significant relationship between strategy orientation and firm innovation. Therefore, the H3 hypothesis is supported. This result is in line with the findings of Tho (2019) and Yousaf et al. (2020). According to the regression analysis results, it was determined that there is a statistically positive and significant relationship between strategic orientation and product technical performance. Accordingly, H4 is supported. This result is in line with the findings of Yang and Zhang (2018) and Aloulou (2018). It has been determined that there is a statistically positive and significant relationship between competitive strategies and firm innovation. Accordingly, H5 and H7 are supported. These results are consistent with the studies of Bayraktar et al. (2017) and Amentie and Sogbossi (2017). In addition, it has been determined that there is a statistically positive and significant relationship between competitive strategies and product technical performance. Accordingly, H6 and H8 are supported. These results are in parallel with the studies of Galbreath et al. (2020) and Bayraktar et al. (2017). Finally, according to the results of the regression analysis, it shows that cost leadership and differentiation strategies mediate the effect of strategic orientation on firm innovation and product technical performance. For this reason, H9, H10, H11 and H12 hypotheses are also supported, although these results show parallelism with the studies of the literature (Rua, França and Ortiz, 2018; Bayraktar et al., 2017). These five variables are included in a single conceptual model and product technical performance. The fact that there is a research model that examines the mediating effect of competitive strategies and that there are very few studies similar to the research model makes this study different from the others.

Conclusions

The results of this study show that the strategic orientation and competitive strategies owned and implemented by the companies cause the production of innovative products and services with high technical performance in the sector in which they operate and positively affect the competitive advantage of themselves. Significant results have been achieved in terms of understanding that strategic orientation and competitive strategies affect firm innovativeness and product technical performance. Findings that strategic orientation has positive and meaningful relationships with both competitive strategies and product technical performance, and firm innovation have important implications for managers and industry practitioners.

First, a positive relationship has been found between strategic orientation and competitive strategies. This finding is also consistent with the finding that the strategic orientation and its sub-dimensions (entrepreneur, technological and customer) orientation's impact on firm performance what increases with the adoption of a competitive strategy (Hernández-Perlines, Moreno-García and Yañez-Araque, 2016; Jassmy and Bhaya, 2016). Managers apply cost leadership and differentiation strategies to take part in competitive market conditions. It is understood that strategic orientation, first of all, have positive and meaningful relationships with cost leadership; while differentiation strategies will give those companies a stronger bargaining power that develops with the contribution of critical resources such as better technical skills, use of new technology, improving the production process, and special technical knowledge and software that can provide a competitive advantage (Li, 2005). In this respect, companies should pay more attention to competitive strategies, which play an important role as a bridge between their strategic orientation and innovation and product performance. For this purpose, they should give importance to strategic tools such as design thinking, brainstorming, portfolio / program / project management, management information systems, quality circles, analysis methods and technology management. Cost leadership should be targeted by reducing marketing and production process costs, reducing unnecessary maintenance

and repair expenses, increasing the speed of product and service launch, and constantly renewing the design of the product or service.

Second, the fact that strategic orientation has a positive relationship with firm innovation seems to be in line with the results of previous studies (Alhakimi and Mahmoud, 2020; Yousaf et al., 2020). It is understood that the effective use of strategic management tools and techniques in all business processes will increase the innovation ability and capacity of companies. It must be constantly in search of new ways, new ideas and new methods. In addition, from the top management to the lowest level, it is necessary to attach importance to R&D (research-development) and production-development (production-development), to ensure sufficient expenditure budget and to make an effort to invest in the latest technology. In addition, it is recommended that the company handles all kinds of innovation activities between internal/external stakeholders and other companies in the ecosystem within a discipline of innovation project management.

As the third, a positive relationship has been found between strategic orientation and product technical performance. This finding seems to be in line with previous studies (Yang and Zhang, 2018; Huang and Li, 2017). Here, design thinking, brainstorming, benchmarking, portfolio/program/project management it may be suggested to use strategic management tools and techniques. In this way, the company can discover the quality and performance differences between the products or services of its competitors and business partners in the industry and its own, and close the gap by changing the technical performance characteristics of the product in the fastest way possible. In this way, it can gain a competitive advantage in its products and services.

Finally, it has been observed that competition strategies have a mediator effect between strategic orientation and firm innovation and technical product performance. This finding seems to be in line with previous studies (Rua, França and Ortiz, 2018; Liu and Gima, 2018). It shows that the more effective the cost leadership and differentiation strategies are used, the greater the impact of the firm's strategic orientation on firm innovation and product technical performance.

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