

# EXAMINATION OF THE EFFECTS OF INTERNAL-TO-FIRM TRANSACTION COSTS AND IMITATION CAPABILITIES ON THE INNOVATION PERFORMANCE AND COMPETITIVENESS OF THE ELECTRIC/ELECTRONIC FIRMS

EXAME DOS EFEITOS DOS CUSTOS DE TRANSAÇÃO DE INTERNO PARA EMPRESA E CAPACIDADES DE IMITAÇÃO SOBRE O DESEMPENHO DE INOVAÇÃO E COMPETITIVIDADE DE EMPRESAS ELÉTRICAS / ELETRÔNICAS

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## ABSTRACT

The aim of the research is to examine both the innovation performance of the electric/electronic firms within the technopark sector, and in addition, the internal-to-firm transaction costs and imitation capability that affect relationships and competition between the variables. In general, products that firms offer to the market are affected by each other, and in this case, the imitation capabilities of firms come to the fore. However, in order to be successful in an innovative and competitive environment, it is necessary to effectively manage the internal-to-firm transaction costs. Within the scope of the study, a survey was given to the engineers working in the electrical/electronic firms that produce and innovate within the body of technopark in Istanbul. A face-to-face survey study was conducted since production was not interrupted in the firms working in technopark during the pandemic process and remote working conditions were not possible for the production sector. Randomly selected firms were visited and 501 employees were interviewed. Analyses were made using the SmartPLS 3.4 Program; a 5-point Likert scale was used for the survey; factor analysis was used to determine the suitability of the scale expressions; reliability/validity analyzes were used to determine the consistency of the scale; and correlation analysis was used to determine the degree of relationship between the variables. Finally, path analysis was used to test the hypotheses, and the same program was used to determine the mediation effect. The results of the analyses showed that the cost of intra-firm transaction and imitation capability have positive effects on innovation performance and the competitiveness of the firms.

**Keywords:** Imitation. Capability. Costs. Innovation. Performance. Competitiveness.

## RESUMO

O objetivo da pesquisa é examinar o desempenho inovador das firmas eletroeletrônicas dentro do tecnoparque em seu setor e o custo de transação interno para a firma e a capacidade de imitação que afetam a competitividade da firma e as relações entre as variáveis. Os produtos que as empresas oferecem ao mercado são afetados uns pelos outros. Nesse caso, as capacidades de imitação das empresas vêm à tona. No entanto, para ter sucesso em inovação e ambiente competitivo, é necessário gerenciar bem os custos de transação entre empresas. No âmbito do estudo, foi realizado um inquérito aos engenheiros que trabalham nas empresas elétricas / eletrônicas que produzem e inovam no technopark de Istambul. Um estudo de pesquisa face a face poderia ser realizado, uma vez que a produção não foi interrompida nas empresas que trabalham no Technopark mesmo durante o processo pandêmico e condições remotas de trabalho não foram possíveis para o setor produtivo. Empresas selecionadas aleatoriamente foram visitadas e 501 funcionários foram entrevistados. As análises foram feitas usando o programa SmartPLS 3.4. Uma escala Likert de 5 pontos foi usada na pesquisa, a análise fatorial foi usada para determinar a adequação das expressões da escala, as análises de confiabilidade / validade foram usadas para determinar a consistência da escala e a análise de correlação foi usada para determinar o grau de relacionamento entre as variáveis. A análise de caminho foi usada para testar as hipóteses. O mesmo programa foi usado para determinar o efeito da mediação. Como resultado das análises, pode-se explicar que o custo de transação intra-firma e a capacidade de imitação têm efeitos positivos no desempenho inovador e na competitividade das firmas.

**Palavras-chave:** Imitação. Capacidade. Custos. Inovação. Desempenho. Competitividade.

## 1 INTRODUCTION

Innovation is the process of transforming new ideas or discoveries into new products, methods, or services that also create value (KAHN, 2018). In fact, innovation encompasses all the processes carried out to develop new or improved products, services, or production methods and make them commercially viable (BIEMANS, 2018). Therefore, innovation is not a single action but a continuous activity. In today's fierce and volatile competitive environment, companies need to constantly change their products, services, and production methods, as well as renew them, in order to maintain their existence and to increase profit by producing value added products (CROWLEY, 2017). Therefore, imitation capability and internal-to-firm transaction costs are included in literature research as two important concepts in innovation. Specifically, imitation capability is critical in terms of improving the products for the market and can only be achieved by closely monitoring competitors and properly managing the internal transaction costs. It is clear that new thinking is fundamental in developing a new or improved product, service, or production method (COOPER, 2019), and can only be achieved by reevaluating and disseminating them for new returns (PALAZZESCHI *et al.*, 2018).

The first contribution to the resource-based theory approach was made by Penrose (1959) who argued that unique resources and capabilities are the most important factors to increase competition and enable the business to earn profits above the industry average. Products and services created by resources are seen as the way resources are used, and when the same resource is used for different purposes or with different combinations with different resources, many different services or products can be obtained. Penrose (1959) saw this difference as integral to creating a unique business. In addition, imitation potential can be defined as mastering new technologies, making improvements in existing solutions, and starting production or services. In terms of an enterprise's resources and capabilities for this goal, they include all financial, physical, human, and corporate assets that the enterprise uses to develop, produce, and offer products and services for its customers. However, some of these resources and capabilities are valuable, rare, inimitable, and institutionalized.

Another key term, transaction cost, was first introduced into the literature by Coase (1937) and is accepted as the basis of the "new corporate economy" paradigm (RINDFLEISCH; HEIDE, 1997; SHELANSKI; KLEIN, 1995). And, in fact, companies may be strategically exposed to excessive transaction costs in line with the decisions they take (WERNERFELT, 2016). Argyres and Bigelow (2007) stated in their study that companies try to keep their costs low in order to react in a competitive environment, especially in a competitive environment where innovations are more frequent. For this reason, firms can generally internalize transaction costs in order to build their capabilities and have options (ARGYRES;

ZENGER, 2012; BARNEY; LEE, 2000). However, the shocks that a firm may encounter in an intensely competitive environment depend on not only the economic conditions but also the timing as to when the decisions to be taken regarding repositioning will be implemented, all of which are important in terms of transaction costs. In addition, in order for companies to be successful in innovation, apart from imitation capability and internal-to-firm transaction costs, employees and managers must collaborate during the innovation process (FERREIRA *et al.*, 2020). Generally, though, both employees and managers are resistant to innovation, and to prevent this resistance, continuous knowledge flow, accurate knowledge, and persuasion become important. While managers easily accept change due to their rewards and expectations, it is likely that there will be a little more resistance among employees. The way to break this resistance is not to directly use authority but to inform and to value people's thoughts. So, to achieve the desired level of innovation performance, the creativity activities of the employees who work in the company should also be given importance (ZHAO *et al.*, 2020). For this reason, it is necessary to increase the efficiency of the employees to maintain voluntary innovation activities (AUDRETSCH; BELITSKI, 2020). So, within the scope of the study, the effects of imitation capability and internal-to-firm transaction costs are examined in order to analyze innovation performance and firm competitiveness.

## **2 LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

### **2.1 IMITATION CAPABILITY**

The sustainability of competitive advantage is based on making it difficult for different products and services to be imitated by other companies and creating value for consumers (HASEEB *et al.*, 2019). For this reason, creating value for companies has become as important as making cost-benefit analysis. The basis of these advantages is to create value, and according to time and situation, differentiate for a competitive advantage (MARINHO *et al.*, 2020). Yet, there is limited knowledge both on how managers identify competitive advantages that will bring success and how to obtain an advantage. Normally, the main resources of past determinations are case studies compiled according to a company's experiences and inferences from anecdotal posts. Andrews (1971) suggested that the strategy development process will begin with the evaluation of the organization's resources and capabilities, arguing that these resources and capabilities, which are superior and privileged compared to competitors, can gain competitive advantage if properly matched with external environmental opportunities. On the other hand, core competency and similar concepts arising from resource-based view are included in many strategy formulation theories. These theories are resource-based (PENROSE, 1959; WERNERFELT, 1984;

BARNEY, 1991), skill-based (HENDERSON; COCKBURN, 1994; DANNEELS, 2007), learning-based (SENGE 1990; LEVINTHAL; MARCH 1993; LEI *et al.*, 1996), and knowledge-based theories (GRANT, 1996), and dynamic capability based (TEECE *et al.*, 1997; EISENHARDT, 2000). Hamel and Prahalad (1994) define basic ability as “collective learning, which determines how to coordinate different production capabilities and combine multiple technology processes.” In fact, the collective learning and coordination skills behind the firm’s production lines are the source of competitive advantage because it enables the firm to offer new products and services to the market. Since Ansoff and Andrews (1987), researchers have contributed to a better understanding of the meaning of core competency: The most impressive study on this subject was carried out by Prahalad and Hamel (1993), a difficult task considering the core competency or the core competency is often overshadowed by the importance of the final product. Prahalad and Hamel (1993) define core competency as the essential elements of the firm’s competitive leverage, explaining the core competency using a tree analogy: “core competency” can be compared to a root system that provides nutrition, development, and balance. As is often the case, just by looking at the company’s final product, the strength of the competitor can be misjudged. Thus, the imitation strategy is about developing existing solutions as a particular market area expects. By taking advantage of its imitation potential, an organization avoids significant R&D expenditure since a product it is trying to copy has already been developed, which leads to significantly reduced overheads and higher margins. A creative imitator does not create a new product or service but improves the existing one and presents it in the right market. For imitators, therefore, the added value of a product that helps them become the market leader is mainly created by organizational capabilities rather than technical capabilities. Within the scope of the research model, the effects of imitation capability on internal-to-firm transaction costs, innovation performance, and firm competitiveness are examined.

## 2.2 INTERNAL-TO-FIRM TRANSACTION COSTS

In his study, Williamson (1971) first noted that transaction cost theory states that people perform actions with opportunistic behaviors and in line with their own interests. After that, the theory of transaction cost was more heavily developed in Williamson’s 1975 work on “Markets and Hierarchies” and “Economic Institutions of Capitalism” where he established that transaction costs arise if opportunism encounters uncertainty or is combined with high asset specificity (WILLIAMSON, 1985). This theory provides a source for analysis that supports the decision to do it internally or externally by comparing the specific activities of the firm with the market (IVANAJ; FRANZIL, 2006), and the transaction costs theory has become the dominant theoretical framework for explaining decisions that determine organizational boundaries. As with all other theories, most of the studies have not developed the perspective, but are based on

reformulation, explanation, and proving (GEYSKENS *et al.*, 2006): Transaction is the basis of transaction cost. According to Williamson, transactions occur when the technological separable interfaces of a good or service are transferred. These transactions create costs that cause friction in the economic system and can be analyzed in three main groups.

First, the cost of knowledge in return for receiving knowledge from a potential partner. These are costs incurred during negotiations and agreements in which all future situations are discussed and agreed upon. For this reason, businesses should calculate the costs that may arise from information exchange while calculating the costs in the partnerships they establish. Otherwise, unwanted expenses may increase due to unforeseen costs. Furthermore, execution costs are costs arising from implementation and performance controls, resolution of conflicts, and revision of contracts when necessary (IVANAJ; FRANZIL, 2006). In partnerships established by businesses, costs may arise from articles that are not included in the contract and are generally noticed later. In order to avoid such problems, businesses should prepare a very good feasibility report before establishing a partnership. Second, internal transaction costs are the approximate cost of bargaining, ranking, and oversight if the particular activity is internalized. Unlike market transaction costs, dispute costs are not included in internal-firm transaction costs because such costs are hypothetical (GULBRANDSEN *et al.*, 2017). Although considered as an assumption, unforeseen extra costs may arise in the activities carried out in the partnerships established by the enterprises. Therefore, this situation is considered as an internal transaction cost. In the given theoretical context, the following hypotheses have been developed;

H1: Imitation capability has a positive effect on internal-to-firm transaction costs

## 2.3 INNOVATION PERFORMANCE

Innovation is derived from the word *innovare*, a latin root verb meaning 'to do something new and different. Schumpeter (1939), the father of the concept, defined innovation as using new production techniques, exploring new resources in raw material supply, introducing new products to the market, and creating new markets while establishing new industrial areas. It is observed that while some products developed within the same business might stand out as examples of successful innovation, others fail (GOURVILLE, 2005). For example, Google, which has an important place among today's high-tech businesses, developed the Buzz product, the social sharing, microblogging and messaging tool that works through an integration with the network-based e-mail program Gmail. But, this product failed in the market and had to leave its place to the Google+ product (LANDEWEERD *et al.*, 2013). Despite this failure, and thanks to Google's successful products (eg, Gmail), it is still at the top of the lists of the world's most innovative businesses (BELTRÁN; GULC, 2021). Again, although Sony has developed highly innovative

products in various fields, the smart phones of this company have not been very popular in the relevant market for a long time (ARSHAD; YAZDANIFARD, 2017). One of the main reasons behind these highlighted cases of success and failure is probably the difference in innovation skills between both businesses and teams active within any one business. For this reason, innovation refers to the work carried out to develop every existing product and to create it in ways that will provide more benefits for the individual (KAHN, 2018). On the one hand, investing in R&D studies of production in order to find a different innovation from other companies may be advantageous: "While R&D converts money to knowledge, innovation is the process that converts knowoney, but it is the process that improves not only money but also the life of humanity (AMARA *et al.*, 2009).

Within this framework, "increasing the quality of life is also included in the work" view that emphasizes innovations in life should be aimed at increasing the quality of life of the individual (RIVA *et al.*, 2014). Although the inventions made are sometimes considered as innovation, often making differences on existing products corresponds more to the meaning of the word (CROSBY, 2000). In a more abstract way, it refers to all kinds of new methods in social, cultural, and administrative fields. Therefore, it shows the innovations in production in concrete terms and in the abstract sense as administrative and socio-economic formations. Innovation for change and innovation has been among the competitive strategies for businesses, especially for the last decade. When examined in the historical process, it is understood that it is one of the methods mostly used to increase the profitability of companies. In addition to using the latest technology in new product development, innovation is also used for the renewal of existing products (DE BEULE; VAN BEVEREN, 2012). Furthermore, the ultimate goal of innovative activities is to increase the efficiency and performance of the enterprise (MOTHE; THI, 2010). The basis of change activities arising as a response to changing internal and external conditions or the necessity to affect the external environment of the organization are the strategic trends towards innovation (ANTONELLI *et al.*, 2013). Organizations that want to adapt to changing internal and external conditions and continue their commercial activities adopt innovation over time (DAMANPOUR; GOPALAKRISHNAN, 1999). Innovation has a recurring character that includes continuous improvement (TID, 2001). As new products, services and processes develop, the relationship with these efforts only arises with different innovations (VON HIPPEL, 2006). Innovation has been subjected to many different classifications according to their degrees, fields and characteristics, generally classified as radical and incremental, according to the degree of change and difference it creates' (HOLAHAN *et al.*, 2014). Radical innovations are formed by major breakthroughs in which products, services, or methods that have not been tried before are developed as a result of radical ideas (GODOE, 2000). Incremental innovations are the result of step-by-step studies that include a series of development and improvement activities (ODURO; NYARKU, 2018). In a different classification

made in the literature, managerial and technical innovation is mentioned. While technical innovations occur in the technical system of the organization and are related to the priority business activities of the organization, managerial innovations occur in the social system of the organization (AL-JININI *et al.*, 2019). A fourfold distinction is made in technical specifications, innovation, and organizational innovation with significant process innovation resting in components, materials, embedded software, or other functional features, which includes changes in the production or delivery method and the developments of the intermediate steps. This method includes important improvements in techniques, equipment, and software. Organizational innovation focuses on differentiating the interaction that organizations will develop within the business field or in external relations (ANZOLA-ROMÁN *et al.*, 2018). It refers to the different configurations for the optimal combination and use of resources. In the given theoretical context, the following hypotheses have been developed;

H2: Imitation capability has a positive effect on innovation performance

H4: Internal-to-firm transaction costs has a positive effect on innovation performance

H6: Internal-to-firm transaction costs has a mediator effect on the relationship between imitation capability and innovation performance

## 2.4 FIRM COMPETITIVENESS

Approaches to performance evaluation in companies are realized as a dynamic process that constantly evolves and changes from past to present (SCHOENFELD, 2019; BALDACCHINO *et al.*, 2020), and within this period, performance perceptions that lost their importance (or were newly introduced and gained more importance) emerged. Briefly, this development process is based on customer satisfaction, employee satisfaction, quality, innovation, etc. as a requirement of today's competitive conditions. This is in contrast to the traditional management approach that aims at the lowest cost, highest production, and higher profits and is expressed as a transition that emphasizes very different performance measures. Currently, companies re-evaluate their performance indicators in order to adapt to increasing competition and changing environmental conditions (KARINGITHI *et al.*, 2020), and today, performance measurements based solely on financial indicators are not considered sufficient in evaluating the performance of businesses (NGUYEN *et al.*, 2020). Indeed, balanced scorecard applications are remarkable in cost accounting (ESTIASIH, 2021). Studies conducted in this field have revealed that performance measures based solely on financial indicators are insufficient in measuring the factors that are important for businesses. Therefore, firms should use non-financial indicators along with financial indicators in performance measurements (BORODIN *et al.*, 2019). Furthermore, traditional performance evaluation methods are unidimensional with financial indicators predominantly used. Contributions provided by financial measurements are



also insufficient in dynamic environmental conditions. The predetermined standard form of traditional measurement systems used in all departments does not allow flexibility and eliminates the priorities of each section. On the other hand, in traditional systems, other interest groups such as employees, suppliers, government, creditors and industry are not taken into account, as measurements and reports are carried out for partners. Financial performance criteria are on an enterprise basis; therefore, criteria on the basis of the industry in which the enterprise operates are not taken into account (BIABANI *et al.*, 2021). Recently, multidimensional performance evaluation approaches have begun to be developed in order to eliminate these shortcomings and those of traditional performance evaluation systems (ZHANG *et al.*, 2019). Meyer and Gupa (1994) state that there are serious differences of opinion on what performance is and that the polarization in performance indicators causes performance paradox, and as a result, organizational control continues without knowing exactly what performance is. Still, it is observed that some performance authorities also make clear definitions regarding performance. Performance in these definitions includes the measurement of outputs and resources used in the production of outputs that are determinative in achieving a goal: the level of achieving a specified goal, which is defined as the efficiency and effectiveness of a purposeful activity (SARDI *et al.*, 2020). They also define it as a complex interrelation between performance indicators, such as effectiveness, productivity, quality, quality of working life, innovation, and profitability (KOOHANG *et al.*, 2017). Based on these definitions, performance can be defined as a concept that determines the output or what is obtained as a result of any activity, either quantitatively or qualitatively (TAOUAB; ISSOR, 2019). In the given theoretical context, the following hypotheses have been developed;

H3: Imitation capability has a positive effect on firm competitiveness

H5: Internal-to-firm transaction costs has a positive effect on firm competitiveness

H7: Internal-to-firm transaction costs has a mediator effect on the relationship between imitation capability and firm competitiveness

### **3 METHODOLOGY**

Within the scope of the study, there are approximately 9 thousand registered companies operating in the field of electricity/electronics in different cities of Turkey. Some of these companies only do contracting work in contrast to those that work on a lump-sum basis. Since the model will be tested on companies that also carry out production operations within the scope of the purpose of the study, a survey has been made to the engineers working in the electrical/electronic companies that produce and innovate within the body of Technopark in Istanbul. A face-to-face survey study was conducted (production was

not interrupted in the companies working in Technopark even during the pandemic process since remote working conditions were not possible for the production sector). Randomly selected companies were visited and 501 employees were interviewed. Participation in the survey was done on a voluntary basis. By giving enough time to the participants, they were prevented from experiencing time pressure. The first pilot study was conducted with 47 participants. In this study, the intelligibility of the survey questions was examined.

Analyses were made using the SmartPLS 3.4 Program. A 5-point Likert scale was used in the survey; factor analysis was used to determine the suitability of the scale expressions, reliability/validity. Analyses were used to determine the consistency of the scale, and correlation analysis was used to determine the degree of relationship between the variables. Path analysis was used to test the hypotheses. The same program was used to determine the mediation effect.

### 3.1 MEASURES

There were four variables in the study. The expressions used to measure these variables were obtained through literature review. At the innovation performance scale; Questions developed by Prajogo and Ahmed (2006), Lichtenthaler and Lichtenthaler (2009), Huang, Chen, Zhang and Ye (2018) were used. The scale developed by Lee and Zhou (2012), and Schnaars (1994) was used to measure imitation capability in the sample population. The scale developed by Buvik and John in 2000 and Gulbrandsen *et al.* (2017) was used to measure the internal-to-firm transaction costs variable in the sample population. The scale developed by Wu (2008), Wu *et al.* (2008) was used to measure firm competitiveness.

501 white-collar workers who worked in different departments of 18 companies answered the questionnaire in accordance with the criteria. 459 (0.92%) men and 42 (0.08%) women responded to our survey with white collar. While 161 (32%) of the participants are between the age group of 25-30, 260 (52%) of them are in the 31-40 age group. The number of managers over the age of 41 is 80 (16%), while 73% of the employees who answered the questionnaire are university graduates; 25% have a master's degree and 2% have a doctorate degree.

### 3.2 RESEARCH GOAL

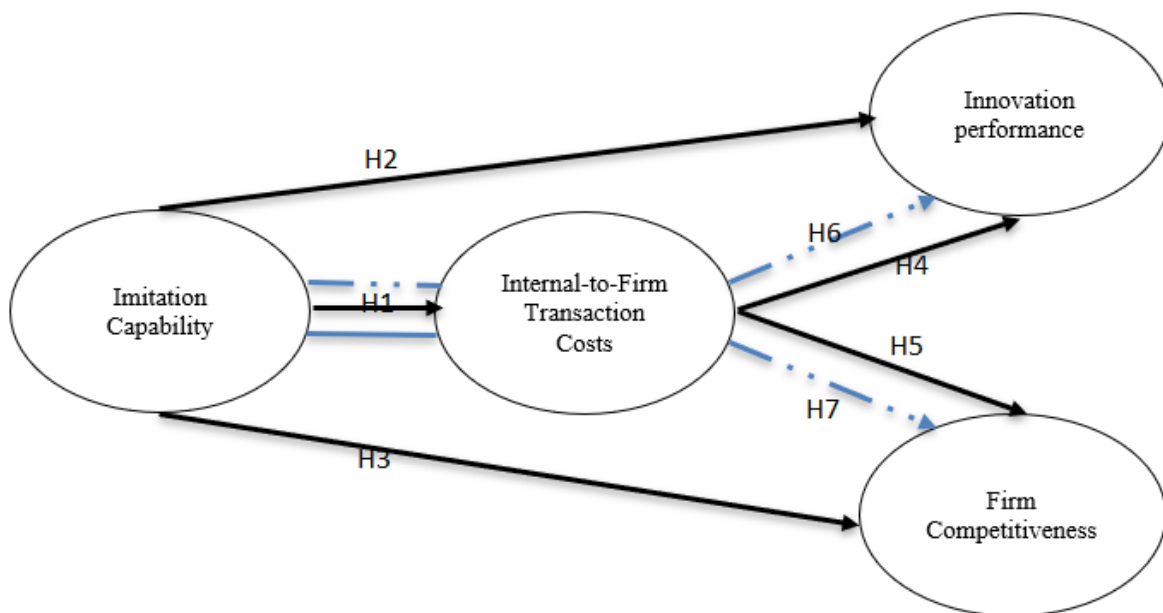
In the research, it is aimed to determine the effects of the relationships between 1) the internal-to-firm transaction costs mediation variable effect of imitation capability and 2) innovation performance and firm competitiveness in companies operating in the electrical and electronics industry. The reason for the selection of companies producing parts in the field of electrical and electronics is that product innovation activities are carried out intensively in this sector. The reason why engineers constitute the sample mass

is that they constitute our sample population because they play a role in both product innovation and firm competitiveness.

### 3.3 RESEARCH FRAMEWORK

Figure 1. was designed with the information presented in the literature part of the research. According to the research model, companies' imitation capability competencies on innovation performance, firm competitiveness, and internal to firm transaction cost were evaluated. As well, the direct effects of internal to firm transaction cost competence on innovation performance and firm competitiveness were analyzed. These hypotheses are given in the range of H1-H5. At the same time, mediation effect analyses were also performed in the study. The mediation effect of internal to firm transaction cost competency between imitation capability-firm competitiveness and imitation capability-innovation performance has been revealed.

**Figure 1. Research Model**



Source: the authors

### 3.4 ANALYSIS

The factor loads of the expressions and the significance tests of the loads are given in the 2nd and 3rd columns of Table 1. Outer loadings give the indicator reliability values, and according to Hulland (1999),

these values should be above 0.70. When the relevant columns in the table are examined, it can be seen that all factor loads are above the value of 0.70, which is considered appropriate by Hulland (1999), and that the Outer loadings t statistic values are above 1.96. This indicates that the outer loading values are meaningful. Outer weight and outer weights t statistical values are given in the 3rd and 4th columns of Table 1. Outer weight values present values related to the multicollinearity problem that may be in the data set. The fact that all of these values are positive indicates that there is no multicollinearity problem in the data set. Table 1. Variance Inflation Factor (VIF) values give information about the multicollinearity problem (MILES, 2014). The fact that VIF values are below 5 for each expression indicates that there is no multicollinearity problem between the variables in the data set. All calculated VIF values were obtained as less than 5.

**Table 1. Factor Analysis**

Items	Outer Loadings	Outer Loadings T Stat.	Outer Weight	Outer Weights T Stat.	R Square	VIF
FC1. We are able to compete with competitors in the market in an intensely competitive environment.	0.874	36.522*	0.365	10.537*	0.446	2.168
FC2. Our organization is able to offer better quality products and services to its customers compared to its competitors in the market.	0.849	18.419*	0.385	9.659*		1.777
FC3. In an intensely competitive environment, our organization can recognize changes in the market (ie competition, market conditions) faster than its competitors.	0.895	29.036*	0.396	10.682*		2.297
IC3. Our new products, although similar to competitors, better meet customer needs.	0.727	9.425*	0.255	9.218*	0.307	1.513
IC4. We actively learn from our competitors and develop products that are better than theirs.	0.896	30.618*	0.322	13.011*		2.700
IC5. We keep the price of our counterfeit products lower than that of our competitors.	0.869	21.902*	0.338	9.645*		2.250
IC1. We often offer products that mimic our competitors' products.	0.811	16.586*	0.286	10.661*		1.891
IFTC1. In terms of controlling costs, process management is carried out very carefully and under control.	0.939	61.415*	0.365	20.294*	0.548	3.956
IFTC2. In order to maintain the costs, the procedures for controlling costs are very important.	0.850	16.769*	0.353	17.991*		2.004
IFTC3. The coordination and management of employees will be very costly.	0.909	44.591*	0.393	13.810*		3.146
IP1. The competitive power of the company I work for in technology is very good.	0.903	31.679*	0.227	16.158*	0.548	3.692
IP2. The company I work for is always ahead in technology innovation.	0.861	26.021*	0.268	12.876*		2.264
IP3. The company I work for is always the leader in the market in new products.	0.902	40.869*	0.230	12.872*		3.579
IP4. The company I work for is very good at developing Innovation projects.	0.811	19.423*	0.213	10.129*		2.466
IP6. Costs per innovation are pretty good.	0.821	15.813*	0.223	10.656*		2.567

**IC: Imitation Capability, IFTC: Internal-to-Firm Transaction Costs, IP: Innovation Performance, FC: Firm Competitiveness**

Cohen (1988) has provided conventional descriptions of effect sizes for R-squared (as well as for other effect size statistics). Cohen (1988) defines a small effect as being R-square equal to 0.02, a medium effect as R-square equal 0.13, and a large effect as being R-square equal 0.26.

Outer loading values above 0.70 give appropriate results in analyses made with SmartPLS. Factor loads above 0.70 also ensure that appropriate AVE and CR values are obtained. These values are given in Table 2.

**Table 2. Construct Reliability and Validity Values**

Variables	Number of Items	Cronbach Alpha	Rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)
Firm Competitiveness	5	0.843	0.845	0.906	0.762
Imitation Capability	4	0.846	0.859	0.897	0.687
Internal-to-Firm Transaction Costs	3	0.912	0.917	0.934	0.740
Innovation performance	3	0.882	0.885	0.927	0.810

Reliability Analysis is a measure that shows the average relationship between statements and is used to determine the internal consistency of the measurement. Measurements with a Cronbach Alpha coefficient of 0.50 and above are interpreted as having internal consistency. As a result of the analysis, all of the Cronbach Alpha values of the variables were obtained above 0.50. This shows that the scale is reliable. The calculated Cronbach Alpha values are presented in Table 2. AVE and CR values, which give the construct and congruent validity values of the scale, are given in Table 2. These values are obtained from factor loads (SÖNMEZ ÇAKIR, 2020). AVE values should be above 0.50 and CR values above 0.70 (ALARCÓN *et al.*, 2015). Rho\_A coefficient; It shows whether the factor items are reliable (RINGLE *et al.*, 2020) and the values should be above 0.70. It can be seen in Table 2 that all given values are above this reference value.

Correlation values were examined in order to reveal the direction of the relations between the variables. If the sign of this coefficient is positive, the relationship between the two variables being compared is directly proportional; If it is negative, it means that it is inversely proportional. The correlation coefficients obtained and the discriminant validity values determined according to the Fornell Larcker criterion are given in Table 3.

**Table 3. Correlations and Discriminant Validity Values**

	Fornell-Larcker Criterion				Heterotrait-Monotrait Ratio (HTMT)		
	FC	IC	IFTC	IP	FC	IC	IFTC
FC	<b>0.873</b>						
IC	0.620*	<b>0.829</b>			0.728		
IFTC	0.551*	0.554*	<b>0.860</b>		0.627	0.624	
IP	0.496*	0.615*	0.684*	<b>0.900</b>	0.570	0.710	0.756

The bold expressions in Table 3 give the discriminant validity of the related variable according to the Fornell-Larcker criterion. The row and column with these dark values must be the largest values. When viewed in the Fornell-Larcker column, the dark value is the largest value and according to this criterion, discriminant validity is provided. The expressions with \* in the table give the correlation coefficients, and these coefficients were obtained as significant at the 0.01 significance level. It is desired that the results obtained for the columns where the Heterotrait-Monotrait Ratio (HTMT) values of Table 3 are given should not be greater than 0.90 (GOLD *et al.*, 2001). Values greater than 0.90 indicate that discriminant validity cannot be achieved. It can be said that these values are within the reference ranges defined in the literature and thus have validity.

**Table 4. Path coefficients and test results for hypotheses**

H.	Paths	Path Coefficient	T Statistics	P Values	Decision
H1	Imitation Capability → Internal-to-Firm Transaction Costs	0.455	5.569	0.000	<b>Accept</b>
H2	Imitation Capability → Innovation Performance	0.554	6.917	0.000	<b>Accept</b>
H3	Imitation Capability → Firm Competitiveness	0.341	3.277	0.001	<b>Accept</b>
H4	Internal-to-Firm Transaction Costs → Innovation Performance	0.298	2.963	0.003	<b>Accept</b>
H5	Internal-to-Firm Transaction Costs → Firm Competitiveness	0.495	6.644	0.000	<b>Accept</b>

All of the Path Coefficient values were positive. This indicates that all hypotheses are correctly established. However, first of all, it is necessary to check whether the results are statistically significant. If the test statistic values obtained from the significance tests are greater than 1.96 (5% level), the relationships are significant. All t statistics values greater than 1.96 were obtained. In addition, since the P-values are less than 0.05, all of the hypotheses are acceptable.

By examining the mediator variable analysis, the Specific Indirect Effect results from SmartPLS are given in Table 5.

**Table 5. Mediation Effect Results (a) Path Coefficient**

H.	Paths	Original Sample	Standard Deviation	T Stat.	P value	Decision
H6	IC→IFTC→IP	0.099	0.031	3.194	0.000	Accept
H7	IC→IFTC→FC	0.196	0.064	3.063	0.000	Accept

The Path Coefficient results for the Mediation Effect are given in Table 5. The presence of the mediation effect was tested with the first table. According to the path results obtained, the mediation effect hypotheses between H6-H7 were accepted. The size of the mediation effect is given in Table 6. VAF value value is used for mediation effect size. VAF measured value Nitzl *et al.* (2016) is a method suggested, and 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
H6	IC→IFTC→IP	0.455	0.298	0.554	0.23	Partial
H7	IC→IFTC→FC	0.455	0.495	0.341	0.40	Partial

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). According to the obtained VAF results, partial mediation effect was revealed.

## 4 DISCUSSIONS

Chandler (1990) revealed that organizations, especially those who are successful against their competitors, can fall into the trap of their own success and stagnate, always using the same strategy and the same competencies. The only way out of this capture is to develop dynamic capabilities that will provide a long-term competitive advantage (BREZNIK; LAHOVNIK, 2016). One such ability is the capacity to imitate (theoretically defined as the potential to imitate). There are different opinions about the effect of the current competition intensity on the firm performance, particularly in the markets in which companies operate (ANDREVSKI *et al.*, 2014; AHMED; AFZA, 2019; KANKAM-KWARTENG *et al.*, 2019; MATHUR *et al.*, 2021). Neoclassical economic theory assumes that competition is important for markets to operate more effectively. It connects companies operating in active markets to their ability



to competition and states that competition will provide strong incentives for companies to reduce their costs and improve their production. Thus, the view in neoclassical economic theory is that competition provides incentives for firms to invest in innovation (DELIGÖNÜL; ÇAVUŞGİL, 1997), and the purpose of companies in the development of innovation or new products and product differentiation is to protect themselves against the intensity of competition or to gain market power (LONKAR; GUPTA, 2017). According to this view, companies are expected to have higher performance in competitive markets, as they have stronger incentives to use their resources effectively. For example, Li *et al.* (2015) grouped the transaction costs factors that the project owner may have to bear in four categories: owner, project contractor, transaction environment, and project efficiency. Transaction costs also have an indirect effect in the uncertainty environment. In order to reduce transaction costs, it is necessary to manage risk management effectively, to clearly define the scope of the work, and to harmonize the relations (GUO *et al.*, 2016; LI *et al.*, 2013). In addition, in reducing transaction costs, it is stated that it is effective in concepts such as leadership, correct decision making, effective communication and technical competence (LI *et al.*, 2013). Since the monopolistic market or low level of competition does not provide a strong incentive for firms to improve their techniques, firm performances are expected to be relatively low. For instance, Arrow's (1962) arguments also support stronger incentives to reduce costs in highly competitive markets. Thus, Arrow (1962) argues that inventions are commercialized by paying appropriate copyright and protection of intellectual property rights; furthermore, competitive markets provide a stronger incentive to innovate to reduce costs than markets with monopolistic features on the assumption. Accordingly, there is less incentive to make costly innovations or develop new products in low competition markets. As well, pre-invention monopolistic power is a strong preventive or deterrent factor for further inventions. These models, which predict that competition positively affects firm performance, are based on the idea that monopolistic rents give managers the opportunity to slack off. Accordingly, there is information asymmetry and subjective risk between company managers and owners. Investments in innovation, which are thought to affect firm performance, are also assumed to be dependent on the decisions of firm managers with low effort expenditure tendency (MANOGNA; MISHRA, 2021). It is thought that the level of competition will affect the executive effort and thus the firm performance. That is to say, while intense competition causes managers to increase their effort and thus higher firm performance, monopolistic markets with low competitive pressure cause company managers to show less effort, more lag, and therefore lower firm performance. Firms are also expected to have a higher risk of bankruptcy in markets with more intense competition. Therefore, in competitive markets, managers need to make more intense efforts to avoid bankruptcy and in these markets, lower rates of slacking are expected.

## 5 CONCLUSION

All studies conducted in the field of innovation consider innovation as an undeniable requirement for businesses. Globalization, technological developments, compulsory or strategic changes in business structures are a driving force for businesses to innovate. The fact that competition in every sector takes a global dimension requires innovation. In addition, in today's business world, businesses should implement innovation activities in order to maintain their competitive structure and be sustainable in the face of the changing market structure and the diversification of customer needs. However, innovation needs to be perceived as a process and managed professionally for successful implementation. Firms have to compete in order to maintain their presence in the sectors in which they do business and to avoid sharp declines in their trade volumes. Especially, technology-oriented companies do not have the luxury of being left behind against rival companies, as they must constantly improve themselves. Therefore, one of the most important ways to get ahead in competition is innovation. Firms know that innovation is important to grow and gain competitive advantage, and the distribution of this competitive knowledge within the company helps the employees to contribute to the innovation process. In addition to closely monitoring the products developed by competitors, the in-house transaction costs must be properly managed to duplicate the properties of these developed products, while also avoiding a loss of market share in the sector involves correctly determining needs and expectations. For this, it is necessary to follow the sector closely and forecast the future, evaluating information gathered from competitors and the market and gaining a competitive advantage by facilitating strategic development. For this process, each company needs to collect data from the industry and reflect this data onto their products. Considering the research results, imitation capability and internal-to-firm transaction costs have positive effects on innovation performance and firm competitiveness. At the same time, the variable effect of internal-to-firm transaction costs mediator also has a positive effect. This situation shows that companies competing in the world of technology feed on each other in order to produce better products thereby strengthening the assumption that companies are affected by each other in order for imitator talent to positively affect innovation. Therefore, we must understand that Competition is the main source of knowledge that will feed creative ideas. The fact that companies are influenced by each other in product development while producing R&D and innovation policies, and at the same time they develop their products with the knowledge they gathered from the market can also be supported by the data obtained from research results. Reasons, such as the development of the industry of many countries in the world, the development of information technologies, and the easier access to knowledge has caused scientific and technological developments to be insufficient, especially in international commercial competition. It is certain that the development

of science and technology is critical, but it is now necessary to turn these developments into commercial success. According to Porter (1980), countries can gain sustainable competitive power in the global market with innovation, and companies can *only* gain a competitive advantage with innovation: Porter finds that “a country’s economy cannot be competitive unless its firms are competitive.” In short, innovation is an indicator of a country’s competitive position, and country-specific academic studies on innovation are a reflection of the innovation activities carried out in that country and the interest in innovation.

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