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Determining Innovation Strategy to Improve Innovation Performance in Landscape Architecture Industry in Turkey

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Abstract

Purpose: This study focuses on the analysis of the innovation strategies that might be applicable by the private sector organizations doing business in the landscape architecture industry to guarantee their survival under competitive conditions for many years and to follow the sector dynamics by keeping up with the everchanging and advancing technologies, and it also analyses the factors having impact on the development of these strategies.

Methodology/Approach: This research consists of the stages of communicating the questions (general company information and AHP method) obtained in line with the data obtained as a result of the literature research to the research participant companies and evaluating the results.

Findings: When innovation inputs and innovation outputs are compared according to participant responses, it is seen that innovation outputs are more important. R&D and design expenditures are more important than human resources. Exports are more important than intellectual property rights.

Practical implications: The study concluded that the optimum strategy for this industry is the aggressive innovation strategy and the goal should be targeting the development of a strategy driven by the innovation outputs.

Originality: It is an original research on the innovation strategy of the landscape architecture sector.

Keywords: Innovation, Innovation Strategy, Research and Development, Desing Center, Landscape Architecture,

JEL Code: O30, O31, O32

Türkiye'de Peyzaj Mimarlığı Sektöründe İnovasyon Performansının Artırılmasına Yönelik İnovasyon Stratejisinin Belirlenmesi

ÖZ

Amaç: Bu çalışma, peyzaj mimarlığı sektöründe faaliyet gösteren özel sektör kuruluşlarının rekabet koşulları altında uzun yıllar ayakta kalabilmeleri, değişen ve gelişen teknolojilere ayak uydurarak sektör dinamiklerini takip edebilmeleri için uygulayabilecekleri inovasyon stratejilerinin analizine odaklanmakta ve bu stratejilerin geliştirilmesinde etkili olan faktörleri incelemektedir.

Metodoloji/ Yöntem: Bu araştırma, literatür araştırması sonucunda elde edilen veriler doğrultusunda elde edilen soruların (genel şirket bilgileri ve AHP yöntemi ile oluşturulan anket soruları) araştırmaya katılan şirketlere iletilmesi ve sonuçların değerlendirilmesi aşamalarından oluşmaktadır.

Bulgular: Katılımcıların yanıtlarına göre inovasyon girdileri ve inovasyon çıktıları karşılaştırıldığında, inovasyon çıktılarının daha önemli olduğu görüşü ortaya konmuştur. Ar-Ge ve tasarım harcamaları, insan kaynaklarından daha önemli bulunmuştur. İhracat fikri mülkiyet haklarından daha önemli bulunmuştur.

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Pratik çıkarımlar: Peyzaj mimarlığı sektörü için en uygun stratejinin saldırgan inovasyon stratejisi olduğu ve inovasyon çıktıları tarafından yönlendirilen bir stratejinin geliştirilmesinin hedeflemesi gerektiği sonucuna varılmıştır.
Özgünlük: Peyzaj mimarlığı sektörünün inovasyon stratejisi üzerine özgün bir araştırmadır.
Anahtar Kelimeler: inovasyon, inovasyon stratejisi, araştırma ve geliştirme, tasarım merkezi, peyzaj mimarlığı
JEL Kodu: O30, O31, O32

Introduction

Scientific and technological developments, diffusion of means to access information, and the ability to survive in a competitive market entail several strategic arguments. Regardless of the industry, the only way to survive under competitive conditions is to develop innovation strategies and to ensure the sustainability of such strategies. This study focuses on the analysis of the innovation strategies, that might be applied by the private sector organizations doing business in the landscape architecture industry to guarantee their survival under competitive conditions for many years and to follow the sector dynamics by keeping up with the everchanging and advancing technologies, and it also analyses the factors having impact on the development of these strategies.

Innovation strategies are grouped under three headings aggressive, defensive, dependent, and imitative, and the factors affecting the development of these strategies are categorized as innovation inputs and innovation outputs. Within the scope of this research, factors influencing the development of innovation strategies were found to be related to the budget allocated to R&D and design, as well as export activities indicating the revenue generated after these investments.

Although human resources and intellectual property rights are considered important, it was concluded that access to technological innovation and knowledge as inputs, and the provision of revenue sources such as exports, are essential for sustainability. The research concluded that the most appropriate strategy for sectoral development is the aggressive innovation strategy, focusing on developing innovation outputs.

Literature Review

The Organisation for Economic Co-operation and Development (OECD) is an international organization established to create awareness and develop actionable policies in the fields of environment, social issues, finance, science, and

technology (OECD, 2022). The Oslo Manual, jointly published by the OECD and the European Statistical Office (Eurostat), is an important component of the measurement guide series titled "Measurement of Scientific, Technological, and Innovation Activities." According to the Oslo Manual, which considers innovation as central to improving living standards and impacting individuals, institutions, sectors, and countries, innovation is defined as a significantly different and potentially offered new or improved product, process, or combination thereof compared to previous ones (Oslo Manual, 2018). Research, development, and innovation activities in Turkey are encouraged by various public institutions. One of these institutions is the Ministry of Industry and Technology of the Republic of Turkey. According to the "Regulation on Supporting and Supervising Research, Development and Design Activities" published by the Ministry in 2016, innovation is defined as follows: "It covers the processes and results obtained from new ideas for new products, services, applications, methods or business models that can effectively respond to social and economic needs, successfully penetrate existing markets or create new markets" (Republic of Turkey Ministry of Industry and Technology, 2016).

One of the major misconceptions about the concept of innovation is the limited understanding of innovation solely within the realm of products. However, according to the Oslo Manual, innovation is considered under two categories: product innovation and process innovation. Product innovation encompasses not only the physical products but also the services offered by a company. In this context, product innovation is defined as significantly different, new, or improved goods and services compared to previous ones. On the other hand, process innovation is defined as distinctly different from before business processes, incorporating one or more functions in new or improved processes. (Oslo Manual, 2018). Another misconception related to innovation is the assumption that innovation and invention are synonymous or that they can only occur within specific sectors. Trott (2012) emphasizes that innovation is about the commercial and practical application of ideas and inventions, highlighting the distinction between innovation and invention. Accordingly, invention is interpreted as the "conception of an idea," while innovation involves "transforming it into commercial value." The concept of innovation is viewed as the sum of theoretical understanding, technical invention, and commercial utilization, considering the comprehension of new ideas as the starting point of innovation. According to Trott, a new idea is neither an invention nor an innovation on its own but can

be defined as an invention when it materializes into a tangible creation (Trott, 2012). The inclusion of services, in addition to products, within the scope of innovation has expanded the number of sectors focused on innovation and the range of activities that can be considered within the category of innovation. Landscape Architecture is among the sectors that can offer both product and service innovation and engage in export activities, which are one of the outputs of innovation. According to the definition published in the Official Gazette by the Chamber of Landscape Architects of the Union of Chambers of Turkish Engineers and Architects (TMMOB) in 2006, landscape architecture services are classified as follows: research, technical consultancy, expert opinion, studies, feasibility, planning, design, project development, revision of drawings and calculations, professional supervision, technical implementation responsibility, preparation of tender documents, acceptance, maintenance, operation, management, and similar tasks (TMMOB, 2006).

"Landscape architecture" occupies a unique position among art, science, and humanities disciplines, providing different perspectives and numerous opportunities for design innovation to assess design success or failure (Murphy, 2016). In other words, landscape and landscape architecture go beyond the notion of garden improvement and encompass environmental sustainability, new technologies, cultural processes, land use, infrastructure, and economic development. With such a broad perspective, it irresistibly contributes to the evolution of landscape architects, making the pursuit of innovation and embracing innovative ideas a natural process (Anderson and Ortega, 2016). This research aims to identify innovation strategies that will enhance the innovation performance of firms operating in the field of Landscape Architecture in Turkey. Additionally, the study aims to analyze the types of innovation (product and process), innovation strategies of landscape architecture firms, and the internal and or external factors influencing the identification of these strategies. Consequently, the research focuses on two main areas: determining the most suitable innovation strategy to enhance innovation performance in landscape architecture and identifying the factors influencing the identification of innovation strategies.

Methodology

The research aims to collect data from companies operating in the landscape architecture sector and evaluate the results after conducting literature reviews

contributing to the definition, measurement, and classification of innovation, such as the Oslo Manual (2018). The survey method was employed to answer the research question, "What is the most suitable innovation strategy to enhance the innovation performance of landscape architecture firms in Turkey?" The research method is summarized in Figure 1. The other research questions are as follows:

- What is the most appropriate innovation strategy for the landscape architecture sector?
- What is the role of innovation inputs and outputs in developing innovation strategies for firms operating in the sector?
- Is there a significant relationship between the employment of personnel with different levels of education (associate degree, undergraduate, and postgraduate) from landscape architecture-related departments and the innovation strategy?
- Which is more significant for firms operating in the landscape architecture sector: innovation inputs or outputs?
- What is the priority innovation strategy within the scope of innovation inputs and outputs?
- Is there a significant relationship between the duration of firm activity and innovation outputs?
- Is there a significant relationship between the main and or sub-activity area of the firm and innovation outputs?

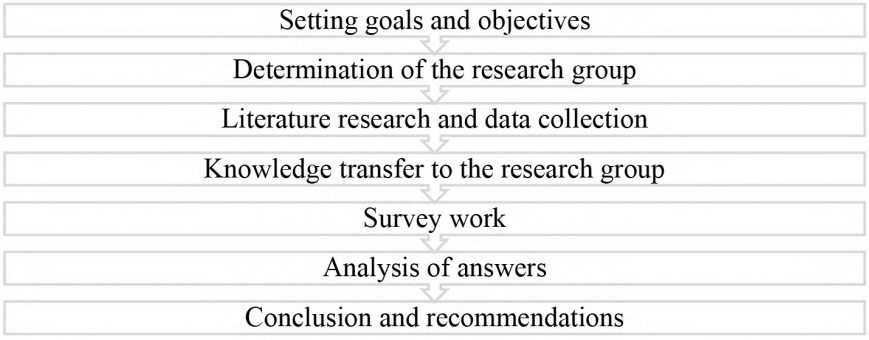

Figure 1. Research Method Flow Chart

This research was carried out with voluntary participants. As a method, the AHP Method was preferred because it allows both subjective and objective evaluations, and the number of participants in the survey study with the AHP method can be limited to a few experts. The population of the study consists of national landscape architecture firms operating in Turkey. In the sample selection, the official membership list published on the website of the Chamber of Landscape Architects of TMMOB (Union of Chambers of Turkish Engineers and Architects) was taken into consideration, and invitations to participate were sent to the firms via email and phone calls. Online interviews were conducted with 10 firms who accepted the invitation to participate using Zoom, with a duration of 45 minutes. Initially, information related to the research purpose was provided, followed by a PowerPoint presentation explaining the key concepts. The presentation included information about the research aim, the concept of innovation, innovation strategies, and innovation inputs and outputs. A pre-test was conducted to ensure an accurate understanding of the presented information before proceeding with the survey. The survey questions consist of three stages (Figure 2). In the first stage, questions regarding general information about the firms were presented to find answers to the research questions. In the second stage, a test was conducted to assess the understanding of the presented innovation strategies during the presentation. Finally, the survey questions were administered using the Analytic Hierarchy Process (AHP) method.

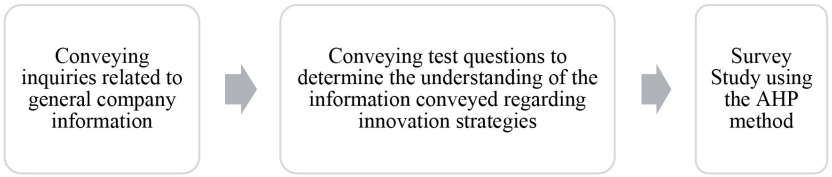

Figure 2. Survey Implementation Workflow

When examining the studies on R&D and innovation measurement, it has been determined that the most suitable measurement method is surveys. It has been observed that the lack of a universal definition of R&D and innovation leads each country to develop its method for statistical data tracking. To change this situation that hinders cross-country comparisons, the joint efforts of the Organisation for Economic Co-operation and Development (OECD) and the European Union (EU), along with the contributions of different stakeholders supported

by the United Nations (UN), have led to the development of the Frascati, Oslo, and Canberra Manuals, as well as the Bogota Manual. These manuals have contributed to the universalization of approaches to defining and measuring R&D and innovation. Since the 1990s, the Community Innovation Survey (CIS) has emerged as the most effective method for collecting and measuring data on innovation activities. The emergence of the innovation survey as a planned and methodological measurement method is based on the Oslo Manual (Akçomak & Kalaycı, 2016). The sources referenced when constructing the general company information questions include the "Harmonised Data Collection for the CIS 2018" (CIS 2018) survey prepared by the European Commission, key performance indicators supported by the Design Center of the Ministry of Industry and Technology, the OECD Oslo Manual, and similar research studies. Additionally, comparative questions covering the period of 2016-2018 as included in CIS 2018 were also taken into consideration. The information regarding the city where the company operates was obtained from the official website of the Chamber of Landscape Architects at https://www.peyzajmimoda.org.tr/. The company name and city information were verified by checking the presence of an active website for the respective company. To analyze the relationship between the company's main field of activity and/or subfields and its innovation activities and innovation strategies, the definition of landscape architecture services published in the Official Gazette in 2006 by the Union of Chambers of Turkish Engineers and Architects (TMMOB) was taken into consideration. This definition encompasses seven categories (Table 2, item 3) (TMMOB, 2006).

AHP (Analytic Hierarchy Process), a decision-making method used in solving multi-criteria problems, was initially developed in the 1970s and provides a means to integrate objective and subjective factors through a measurement theory (Brunelli, 2014; Daşdemir & Güngör, 2002). Within the scope of the research, the AHP method was chosen to address the relationship between innovation inputs, innovation outputs, and innovation strategies. The innovation strategies that companies can pursue in their innovation activities are detailed in Table 1. Instead of following a single strategy, companies can transition between strategies over time and exhibit different innovation models.

Table 1. The Innovation Strategies (Trott 2012; Bozkurt 2013)

Strategy	Explanation
Aggressive	It aims to be the market leader by introducing products to the market before competitors. It is implemented by companies with high innovation capacity.
Defensive	It focuses on the methods used by companies implementing aggressive innovation strategies. It offers advantages such as introducing an improved version of the innovation model being emulated and eliminating initial development costs.
Imitative	It is based on imitating the innovation already introduced by competitors but at lower costs
Dependent	It is a strategy driven by market demand and competitive pressure. It is implemented by companies with strong professional skills.
Traditional	It is a strategy of innovation that involves making small changes to a product to meet the specific needs of a particular market.
Opportunistic	It is a strategy type where previously unthought-of needs and demands are identified through the analysis of market needs.

The research focuses on four innovation strategies: aggressive, defensive, imitative, and dependent innovation strategies. According to the Frascati Manual, the R&D inputs to be measured are classified as R&D personnel, R&D expenditures, R&D facilities, and national R&D efforts. As for R&D outputs, they include patents/utility models, number of articles, exports of high-tech products, and revenues from know-how licensing (Özdinç, 2019). In the survey, innovation inputs are considered as human resources and R&D/ Design expenditures, while innovation outputs are represented by the IPR (product/process innovation) and exports (Figure 3).

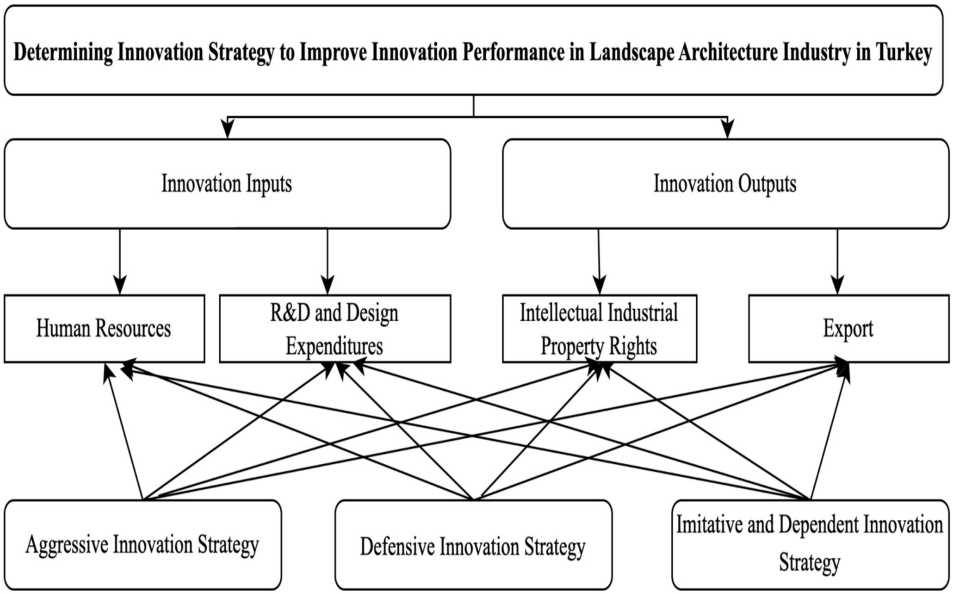

Figure 3. AHP Research Model

Findings

All participating firms have been in operation for a minimum of five years. Eight firms are based in Istanbul, one firm is located in Izmir, and one firm operates in Ankara. All firms provide services in multiple sub-activity areas. Seven firms have an innovative performance reward system, and five firms collaborate with universities. Nine firms have experience in international projects. All firms employ personnel who have graduated from technical departments, and two firms have filed for patents. The answers provided by the survey participants to the general information questions about their companies are presented in Table 2.

Table 2. Survey Data on Company General Information

1. In this section, the year of operation of the companies is indicated.							
	1-5 Year	5-10 Year	10-15 Year	15-20 Year	20 Year +		
Duration of Operation	1	1	2	2	4		
2. In this section, the central province information of the companies is shared numerically							
	İstanbul	İzmir	Ankara				
Operating Province (Headquarters)	8	1	1				
3. In this section, the company's main activity and sub-activity answers are shown numerically.							
1-Landscape planning, 2- Landscape design, landscaping, and projecting services, 3- Landscape architecture implementation and management services 4- Landscape architecture technical consultancy services, 5- Production of ornamental plants, 6- Maintenance, nature protection, and restoration works in a landscape application, 7- Other scientific, technical, and artistic studies							
	1	2	3	4	5	6	7
Main Field of Activity		1	6	3			
Sub-Field of Activity	5	3	4	9	2	2	4
4. The yes/no answers to the questions asked in this section are shared numerically.							
	Yes	No					
Innovative Performance Award System	7	3					
University-Industry Collaboration	5	5					
International Project Experience	9	1					
5. The answers given to the questions asked in this section are shared numerically.							
	1-5	5-10	10-15	15-20	20-25	25-30	30+
Number of Technical Department Graduates	7			2			1
Number of Master's Degree Graduates	7						
Number of PhD Graduates	2						
Number of Patents	2						

Within the scope of the research, one of the main criteria, innovation inputs, encompasses research and development (R&D) and design expenditure, as well as human resources as sub-criteria. Under the framework of innovation outputs, export and intellectual property rights (IPR) are considered. According to the survey results, when comparing innovation inputs and innovation outputs, innovation outputs were found to be more important. Among the sub-criteria of innovation inputs, R&D and design expenditure were considered more important compared to human resources. In terms of the importance of innovation outputs, export was found to be more important than intellectual property rights. When comparing innovation strategies, the aggressive innovation strategy was found to be more important compared to defense-oriented and imitative-dependent innovation strategies. Table 3 presents the data of the questions asked by the AHP method.

Table 3. Survey Responses Delivered by AHP Method

Comparison of Main Criteria by Importance Level	Innovation Inputs	1,4097
	Innovation Outputs	1,000
Comparison of Importance Levels for Innovation Inputs Sub-Criteria	R&D and Design Expenditures	0,613
	Human Resources	0,387
Comparison of Importance Levels for Innovation Outputs Sub-Criteria	Export	0,54
	Intellectual Property Rights	0,46
Comparison of Importance Levels for Innovation Strategies	Aggressive Innovation Strategy	0,551
	Defensive Innovation Strategy	0,328
	Imitative and Dependent Innovation Strategy	0,121

Conclusions and Recommendations

In the context of landscape architecture, the definition and application of innovation lack a critical examination, despite its widespread use in other disciplines (Anderson and Ortega, 2016). Landscape architecture activities encom-

pass a multidimensional field that includes production, planning, design, implementation, consulting, maintenance, and repair, as well as scientific, technical, and artistic work (TMMOB, 2016). It is a profession that enables the creation of shared value with other disciplines and has a versatile application area. Each project, due to uncontrollable factors within its scope (such as climate and environmental conditions), requires innovation in its processes. Additionally, as a discipline that focuses on user experience, landscape architecture provides opportunities for product innovation. Since 2016, the Design Center incentive, provided by the Ministry of Industry and Technology of the Republic of Turkey, has been implemented to enhance the competitiveness of companies engaged in design activities by offering certain tax exemptions. The justification statement emphasizes that design is not solely associated with luxury product groups but is increasingly being utilized as a strategic tool enabling product differentiation and competition (TBMM, 2016). It highlights the need to consider technical innovation and design as an integrated whole, aiming to promote the recognition of Turkish design identity and enable designers to compete globally.

Within the scope of the Implementation and Supervision Regulation on Supporting Research, Development, and Design Activities published in the Official Gazette on August 10, 2016, it refers to Design Center; "units that are organized as a separate unit within the organizational structure, exclusively engaged in domestic design activities, employ at least ten full-time equivalent design personnel, and have sufficient design accumulation and capability" (Official Gazette, 2016). For companies to sustain their activities and pursue a competitive strategy, support activities are carried out in a way to takes into account key performance indicators such as university-industry cooperation, FSMH studies, increasing the number of personnel graduating from departments related to the field of activity, employment of personnel with master's and doctorate degrees, export activity, academic publications, national and international incentivized project execution.

According to the OECD Oslo Manual (2018), one of the factors considered in measuring innovation is the age of the firm. Experienced firms are believed to have foresight regarding the potential outcomes of investments, while younger firms are noted for their more agile reaction in implementing innovation (Oslo Manual, 2018). In a study examining the relationship between firm age, firm growth, and innovation, it was concluded that the impact of R&D on growth

is stable for established firms, while for new firms, it leads to a quantitative increase (Coad et al., 2016). Sorensen & Stuart (2020) discovered that as a firm age increases, it produces more innovation; however, there is an inverse relationship between organizational capabilities and environmental demands. Similarly, in this study, it was observed that as the age of participating firms increased, there was an increase in innovation inputs and outputs, the presence of performance reward systems, and university-industry collaboration. It was concluded that firms, based on their accumulated experience over time, are better suited to develop innovation strategies in an environment conducive to it. Particularly in sectors like information technology and manufacturing, the mentorship system, which facilitates the transfer of technical knowledge over time, could be extended to the landscape architecture sector. This would provide young firms with the ability to anticipate potential risks and create an infrastructure that fosters the development of innovation strategies.

An innovation team in project management should consist of top-level project managers, internal teams that generate ideas (intrapreneurs), and market researchers to prevent internal conflicts and make critical decisions (Roberts, 2007). According to Drucker (2002), there are four opportunity areas for a firm or industry: unexpected events, inconsistencies, process needs, and sector and market changes. In addition to these opportunity areas, demographic changes, perceptual changes, and new knowledge are seen as additional opportunity domains (Drucker, 2002). Therefore, innovation, driven by opportunities, can only be achieved through a strong team capable of conducting opportunity exploration. To examine the relationship between human resources and innovation, a study conducted in China analyzed two datasets and a total of 1566 firms, using the number of patents as an indicator of innovation. It was found that as the educational level of employees increased, there was an increase in the number of patents and the likelihood of innovation for the firm (Sun & Ghosal, 2020). In this study, it was observed that an increase in the number of personnel in the participating firms corresponded to a tendency towards both aggressive and defensive innovation strategies. Similarly, firms employing personnel with postgraduate degrees and having a personnel count exceeding five displayed an increased inclination towards defensive and aggressive innovation strategies. In addition to research indicating that performance reward systems associated with high rewards undermine intrinsic motivation in obtaining innovative ideas,

it has been demonstrated that systems designed with low reward mechanisms can yield a sufficient number of ideas at a lower cost (Baumann and Nils, 2014). Research exploring the relationship between performance reward systems and innovation has provided evidence that such systems effectively incentivize innovation (Williams, 2012).

Innovation management encompasses a range of activities aimed at facilitating the generation, accumulation, and assessment of novel ideas within an organizational context. Furthermore, it is underpinned by a set of strategies and practices that contribute to its effectiveness. These include the establishment of knowledge management systems to capture and disseminate valuable insights, the implementation of employee suggestion programs to harness the creative potential of the workforce, the utilization of diverse financial and non-financial incentive mechanisms to incentivize innovative behavior, the delegation of decision-making authority to relevant units and managers, the involvement of employee representatives in the decision-making process to ensure inclusivity and diverse perspectives, and the identification of key individuals and groups to spearhead innovation through targeted actions aimed at fostering motivation and incentivization. These recommended approaches align with the guidelines delineated in the Oslo Manual (2018) for the proficient management of innovation processes. In recent years, to contribute to the innovative idea process not only from within the organization but also from external sources, competitions on thematic subjects have been organized. In a study examining the impact of competitions and rewards, it was revealed that the market value of the award generally motivates participants but does not attract traditional sector players (Kay, 2011). Considering that the purpose of these competitions is to create value from different perspectives, it can be anticipated that the expected effect will be achieved. The existence of a performance reward system in firms is considered one of the key performance indicators supported under the Design Center support provided by the Ministry of Science, Industry, and Technology of the Republic of Turkey. Particularly, facilitating the sharing of identified good practice examples from design centers, in collaboration with the Chamber of Landscape Architects of TMMOB (Union of Chambers of Turkish Engineers and Architects), through their official website or newsletter dissemination, will guide firms operating in the field of landscape architecture. Although there have been numerous studies focusing on the number of patents as an indicator of innovation output

for firms, it has been observed that there is a limited amount of research analyzing the relationship between academic research and innovation. Within this scope, research conducted by Zahringer et al. (2017) revealed that high-quality scientific research based on a strong academic foundation is associated with high-quality industrial innovation. It was found that firms citing academic research in journal articles tend to have higher patent quality. Furthermore, it was determined that articles published in high-impact factor journals contribute to high-quality industrial innovation.

Landscape architecture being a multidisciplinary profession, can generate innovative outputs within the framework of Intellectual Property Rights (IPR) such as patents and design registrations. In addition to efforts to increase patent holdings, researching existing patent data plays an important role in firms' R&D strategy formulation and decision-making. This allows firms to gain advantages such as keeping track of industry developments, seizing new opportunities, and being aware of and monitoring the technological profile of potential partners (Baglieri & Cesaroni, 2013). International Patent Classification (IPC) covers patent applications under 8 main categories, and in the context of landscape architecture, applications are generally classified under Class A, which encompasses human needs (IPC, TPE, 2022). As part of the research, information requests were made regarding Intellectual Property Rights (IPR) as one of the innovative outputs, including patents, industrial designs, trademark registrations, copyright, and know-how transfer, as stated in CIS 2018, for the past three years. It was found that two companies had made applications in this regard. Adding courses related to IPR processes to the curriculum of universities and organizing informative training sessions by professional associations can promote awareness in this field.

Innovation has a systemic nature, and the innovation capacity of a country depends on multiple actors in interaction, such as universities and industry. To ensure systemic integrity, the involvement of the government is necessary (Göker, 2000). Projects aimed at enhancing university-industry collaboration focus on mutual benefits. The interaction between universities and the field enables the transfer of scientific and technological research from theory to practice, while the interaction between companies in the field and universities creates an environment for rapid access to up-to-date knowledge through the university's bridging role. It has been observed that participant firms are inclined towards university-industry collaboration; however, factors such as the absence of suit-

able collaborative projects and concerns about whether the needs can be met influence the decision to participate in joint projects. In Turkey, one good practice example to enhance university-industry collaboration is the TÜBİTAK 1505 University-Industry Cooperation Support Program (TÜBİTAK, 2022). The program aims to enable the transformation and commercialization of university research infrastructure, knowledge accumulation, and technology in line with the needs of companies operating in Turkey. To address project impasses or explore opportunities in the landscape architecture sector, it is important to increase the interaction between universities and companies through Technology Transfer Offices. By fostering closer collaboration and communication between universities and industry, such initiatives can contribute to the development and implementation of innovative projects in the landscape architecture sector.

OECD Oslo Manual (2018) states that the geographical markets targeted by a firm influence its scope and direction of operations, provide insights into diversity and competitive capabilities in responding to user demands, and consequently shape the firm's strategy (Oslo Manual, 2018). To collect this information, it is recommended to inquire whether the firm conducts product sales in a specific geographic region. Between 1994 and 1997, a survey was conducted with manufacturing SMEs focusing on innovative capabilities in export performance, considering firm characteristics (age, production status, etc.), technological capabilities (internal R&D, modernization, automation, technical knowledge, etc.), and commercial capabilities (diversification, brand registration, distribution access, import activities, etc.). The research interpreted import activities, R&D, distribution access, information intensity, and size as the most influential factors in the process. The study observed that in industries with high knowledge and experience, technological capabilities are the strongest, while certain commercial capabilities are more prominent in industries with low to medium knowledge intensity. In sectors with low, medium, or high knowledge intensity, R&D and information intensity are among the top five determinants of both export performance and behavior, highlighting the importance of knowledge in international competition (Lefebvre & Lefebvre, 2012). At the present time, innovative firms playing an effectual role in know-how management have become significant competitive factors.

It is argued that there is a positive relationship between a country's creativity, innovation, technological development capacity, and export value. The justification for this claim emphasizes that a technologically advanced country

is more likely to transfer technology and enter the markets of other countries (DiPietro & Anoruo, 2006). Similarly, Carboni and Medda (2020) examined the role of innovative product sales and tangible assets in the share of exports in total turnover in European manufacturing firms (14,911) in Germany, France, Italy, Spain, the United Kingdom, Austria, and Hungary. The research found that both product innovation and tangible investments are linked to export intensity, and it highlighted that companies focusing on product innovation also renew themselves as a result of these efforts (Carboni & Medda, 2020). Within the scope of this research, factors influencing the development of innovation strategies were found to be related to the budget allocated to R&D and design, as well as export activities indicating the revenue generated after these investments. Although human resources and intellectual property rights are considered important, it was concluded that access to technological innovation and knowledge as inputs, and the provision of revenue sources such as exports, are essential for sustainability. It is believed that meeting these conditions will naturally contribute to the development of human resources and intellectual property rights. Based on this result, the participation of firms operating in the landscape architecture sector in sector-specific research and market entry training organized by the Turkish Exporters Assembly and Chambers of Industry and Commerce would be beneficial. This participation would provide insights into the financial and legal conditions for firms venturing into foreign markets for the first time.

In a research study conducted to examine the concept of innovation and innovation strategies among small and medium-sized enterprises (SMEs) operating in different sectors, it was found that participants predominantly pursued defensive and aggressive innovation strategies. The factors that motivated firms towards innovation were primarily the belief that innovation provides a competitive advantage and the increase in market demand for innovative products (Deniz, 2011). In a study conducted in Norway that focused on the relationship between innovation strategies and the continuity of innovation, five innovation strategies (temporary, supplier-driven, market-focused, R&D-intensive, and science-based) were examined. It was found that firms adopting "market-driven," "R&D-intensive," and "science-based" strategies had a higher likelihood of being persistent innovators (Clausen et al., 2012).

Within the scope of this research, innovation strategies applicable to the landscape architecture sector and the factors influencing the development of

these strategies were analyzed. Based on the questions directed at general information about the firms and the responses received, the identified innovation strategies (aggressive, defensive, imitative, and dependent) can be considered suitable for the sector, depending on the firm scale and age. The research concluded that the most appropriate strategy for sectoral development is the aggressive innovation strategy, focusing on developing innovation outputs.

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