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Internet capabilities and innovation in the Balkan countries: The role of foreign technology licensing

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Abstract
Using the resource-based view and knowledge spillover, this study investigates the direct effects of Internet capabilities (communication, platform, and connection capabilities) on product and process innovation across 10 Balkan countries from 2007 to 2019. The study examines the role of foreign technology licensing in moderating these relationships. In line with findings from developed countries, the empirical results show that Internet capabilities positively influence product and process innovation. Surprisingly, foreign technology licensing was unable to enhance the positive effects of Internet capabilities on process and product innovation due to the overlapped benefits and the potential costs and risks involved in the Balkan countries. As a result, our study enhances the literature's understanding of Internet capabilities' effects on innovation and the role of foreign technology licensing, enriching current knowledge and providing practical implications for the developing context of the Balkan countries.

KEYWORDS
Balkan countries, foreign technology licensing, internet capabilities, process innovation, product innovation

1 | INTRODUCTION

Academics and business experts recognize that global firms located in both emerging and advanced markets need to exploit Industry 4.0 technologies (Hannibal, 2020). Digitalization within Industry 4.0 is transforming business patterns and value-adding processes and offering new innovative opportunities and solutions for thriving in the new competitive scenario (Bhatti et al., 2022). In particular, the application of advanced digital technologies, such as big data analytics, Internet of Things (IoT), artificial intelligence, and autonomous robotic systems represents a disruptive innovation that paves the way toward radical changes in all business activities (Chen et al., 2019; Hannibal & Knight, 2018). Consequently, a new paradigm has emerged, named "Digital Transformation", to advance the sweeping changes that firms, organizations, and wider society are undertaking to respond to Industry 4.0 and solving challenges concerning efficiency and effectiveness (Heavin & Power, 2018; Kraus et al., 2022). In this vein, digital transformation is completely redefining business across the world and companies across industries, shapes, and forms, in which companies are encouraged to transform their business models and leverage digital technologies to remain competitive in their markets, respectively (Fernandez-Vidal et al., 2022; Verhoef et al., 2021).

Amid the aforementioned changes, Internet and Information Technology (IT), although they are derived from the Third Industrial Revolution, still exert great influence on organizational structures and business activities as technological root development in the Industry 4.0 era. For example, firms' Internet capabilities enhance business communication and interactions with buyers and suppliers (Bianchi et al., 2017; Wu et al., 2016) and provide access to relevant markets and new technological inventions (Urbinati et al., 2018). They also improve productivity (Paunov & Rollo, 2015), lower transaction and operating costs (Glavas & Mathews, 2014), facilitate information sharing (Jean & Kim, 2020), and enable knowledge spillovers (Foss, Ni, et al., 2013). In addition, the Internet enables access to new product and process innovation and development ideas (Paunov & Rollo, 2016; Urbinati et al., 2018; Wu et al., 2016), and eventually boosts firms' overall performance (Paunov & Rollo, 2015). However, current studies have mainly focused on advanced markets investigating the role of the Internet's capabilities on process and product innovation (Nambisan et al., 2017; Nambisan et al., 2019; Yoo et al., 2012; Yousaf et al., 2021). Research investigating how firms take advantage of their Internet capabilities to nurture product and process innovation in developing countries, especially within the Balkan area, is thus scarce (Li et al., 2010; Ndou, 2004; Paunov & Rollo, 2015, 2016).

A predominant perspective is that Balkan countries, as one of the essential regions, particularly on the European continent, lost the economic race with Western Europe over the last 30 years due to their national strategy and financial limitations (Ndou et al., 2019). However, many consider the digital transformation as their big chance to make up for lost time and bring this vision to life. Besides, there has been a wide consensus that innovation performance is the method through which the Balkan industry can grow to overcome the economic crisis of recent years, ensuring the establishment of a stable and prosperous peninsula (OECD, 2016). Hence, innovation has been introduced as one of the fundamental policies for the Balkan regional growth strategy.

How digital transformation facilitates Balkan innovation performance is of great interest to local policymakers and scholars. Specifically, how do firm-level Internet capabilities improve firms' product/process innovation? Does the proven positive role of Internet capabilities on product and process innovation in developed markets still apply in Balkan countries? (Ardito et al., 2021; Caputo et al., 2021; Jean & Kim, 2020). There is no solid evidence describing the hypothesized positive effects on firms' innovation performance in Balkan countries. Thus, it is important and necessary to explain and illustrate the effects of Internet capabilities on innovation in the Balkans.

Additionally, foreign technology licensing plays a crucial role in promoting innovation due to the external transfer of knowledge and the exclusive licensed use of new technology (Foss, Ni, et al., 2013; Li et al., 2010; Wang & Li-Ying, 2015). Existing studies also corroborate the positive direct effects of foreign technology licensing on innovation (Abubakar et al., 2018; Li et al., 2010). Knowledge transfer and spillover can be derived from Internet capabilities and foreign technology agreements; however, does foreign technology licensing still strengthen the potential positive effects of Internet capabilities or is it now meaningless to the aforementioned influence? The results are still inconclusive and vary across contexts (Abdurazzakov et al., 2020; Fatima, 2017; Fu et al., 2011; Wang et al., 2020).

In this study, drawing upon the perspectives of the resource-based view (RBV) and knowledge spillover, we attempt to disentangle the effects of firms' Internet capabilities on innovation and the moderating role of foreign technology licensing on this relationship. Moreover, we categorize Internet capabilities into three dimensions (i.e., communication, platform, and connection platform) following the study of Jean and Kim (2020). Within 10 Balkan countries, 12,093 observations are included covering the period 2007–2019.

We make three core contributions to extend the Internet and innovation literature. First, we extend the current study on the effects of Internet capabilities and innovation outcome based on the resources-constrained and knowledge spillover view. Our results show the positive effect of Internet capabilities on innovation, explaining how Internet capabilities facilitate and encourage product and process innovation, thus matching past findings in developed countries.

Second, our study theoretically and empirically links foreign licensed technology and the Internet with influencing innovation performance. More specifically, we investigate the moderating role of foreign technology licensing on the relationship between Internet capabilities and innovation. Our results present an insignificant moderating effect of foreign licensed technology on the link between Internet capabilities and innovation. This is partly due to the advantages derived from foreign technology licensing that can be easily replaced by the Internet since strong Internet capabilities enable the user to acquire external technology knowledge according to the knowledge spillover theory. Moreover, previous evidence shows that foreign licensing more effectively operates in countries with better absorptive capability (Yang & Maskus, 2001). Although foreign technology licensing is beneficial to developing countries, it is considered costly compared to advanced countries because of technology licensing agreements, and risky for firms that deliver technology due to the possibility of expropriation and reverse engineering (Almeida & Fernandes, 2008).

Third, this paper contributes to the related literature in the Balkan countries regarding Internet capabilities, innovation, and foreign technology licensing. The conclusions of this study provide clear evidence about how Internet capabilities enhance product and process innovation, to study the role of foreign technology licensing in these relations, and to identify how they reinforce and improve innovation performance in Balkan countries. This may assist in advancing scholars' understanding of this topic and provide practical guidelines for managers and policymakers in Balkan and other countries under similar circumstances. In addition, the importance of this research lies in the study's contribution to the economic development of the European Union (EU) because Balkan countries are a significant part of the EU and considerably participate in its economy (EU Commission, 2020).

The remainder of the paper proceeds as follows. In the following section, we explain the Balkan context and review the existing literature on Internet capabilities and innovation, as well as the moderating role of foreign licensed technology. We then develop the hypotheses. Next, we describe the sample and variable measurements and clarify how to test our arguments. We subsequently present the analysis of the results and discuss their implications at the theoretical and practical levels. Finally, we present the study's limitations, key findings, future research lines, and conclude the article.

2 | THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

2.1 | The Balkan countries context

The focus of this study is on the developing context of the Balkan countries, a fundamental and integral part of the EU, although not all of the Balkan countries are presently member states, such as Kosovo, Montenegro, North Macedonia, and Serbia.[1] The economies of the Balkan region are widely composed of enterprises with low productivity and constrained resources (Rehman et al., 2019). Accordingly, firms in Balkan countries have not converted knowledge into market offerings as efficiently as firms in developed countries, suggesting lower innovation performance in practice (Badaj & Radi, 2018; Rachidi & El Mohajir, 2020). Consequently, these issues significantly impede such firms' economic contributions to their countries' economic growth (Doern, 2009).

In this regard, Balkan countries have realized the need and value of improving firms' innovation performance for their national economic development (Bartlett & Rangelova, 1997; Pissarides, 1999). In addition, recent digital technology developments (and improvements) favorably affect firms' innovation performance under the emerging digitalization trend (Ardolino et al., 2018; Nambisan et al., 2017; Thapa & Sæbø, 2014; Yoo et al., 2012). The Balkans' economic and investment plan aims to bring this region closer to the EU single market by facilitating the digital transition, strengthening innovation potential, and applying structural reforms (EU Commission, 2020). Hence, the Balkans could exploit the EU's digital strategy to develop and achieve the digital transformation of their economies and societies (EU Commission, 2020). Therefore, the ways in which firms in the Balkan countries take full advantage of digital technologies to strengthen their innovation performance is of great interest to managers and policymakers (Mariani & Fosso Wamba, 2020; Urbinati et al., 2018).

2.2 | Conceptual framework

We borrow a theoretical lens from the RBV in the IT business value research to test the influence of firms' Internet capabilities on innovation performance. Stemming from the conventional RBV, the RBV of IT business value research suggests IT alone cannot represent a firm's competitive advantage due to the relatively lower barriers to imitation and acquisition by other firms (Jean & Kim, 2020; Wade & Hulland, 2004). We therefore draw upon the RBV stream of IT business value research, arguing IT alone cannot meet VRIN criteria: that is, it may not be valuable, rare, inimitable, and non-substitutable. Competitive advantages can be generated only when IT-related capabilities (in our case, platform, communication, and connection capabilities) are embedded within higher order organizational capabilities (in our case, innovation capabilities).

A previous work based on the RBV in IT business value research recommended that IT capabilities are first-order capabilities that can utilize higher order capabilities such as absorptive capability (Liu et al., 2013) and supply chain integration capability (Rai et al., 2006), in turn leading to higher performance. Extending the logic of RBV in IT business value research to the innovation performance context, we argue that firms' Internet capabilities as first-order capabilities can enhance product and process improvement. Internet capabilities are considered to be an essential innovation tool for companies and play a vital role in providing firms with new styles and methods to conduct businesses, subsequently intensifying firms' innovation performance to succeed in this changing and challenging business environment (Glavas & Mathews, 2014; Jean & Kim, 2020; Ndou et al., 2019).

In this study, we conceptualize and categorize Internet capabilities into three parts: platform, communication, and connection capabilities, following the structure and idea of Jean and Kim (2020). Previous studies have focused mainly on the role of platform and communication capabilities on innovation (Manyika & Lund, 2016; Morgan-Thomas & Bridgewater, 2004). On the other hand, our paper also includes connection capability, which ensures the stability of the platform and communication functions (Fichman et al., 2014). Strong or weak Internet capabilities are based upon how fast firms reach out to customers (connection capabilities), how efficiently firms communicate with stakeholders (communication capabilities), and to what extent firms exhibit their products and processes (platform capabilities).

Furthermore, previous research has documented the directly positive role of foreign technology licensing on innovation through building technological capabilities, especially when technology is not within the capacity of local firms. (Abubakar et al., 2018; Adu-Danso & Abbey, 2020; Demirkan, 2018; Li et al., 2010). However, the moderating role of foreign technology on the relationship between the Internet and innovation remains inconclusive. The ways in which foreign and external resources moderate the relationship is, therefore, of great interest to scholars and practitioners. It could provide external knowledge for different technologies, abilities, skills needed to innovate, and, in particular, product development and process advances according to the knowledge spillover theory (Ferreira et al., 2017; Li et al., 2010; Paunov & Rollo, 2016; Wang & Li-Ying, 2015). Knowledge spillover contributes to disseminating information across different countries. Firms among different sectors and industries utilize the knowledge obtained from different sources to innovate and develop their products and processes. With the amount of information and ease of access to it, knowledge is becoming a valuable asset and a vital resource in developing a firm (Jones & Ratten, 2021).

Briefly, our study focuses on the direct effects of Internet capabilities and one dimension of digital technologies, consisting of connectivity, platform, and communication capabilities on innovation from the reconsideration of RBV and Internet knowledge spillover. Furthermore, we still

[1]https://european-union.europa.eu/principles-countries-history/country-profiles_en.

consider the moderating role of foreign technology licensing, starting with the theory of knowledge spillover. Figure 1 presents the research framework that depicts the relationship between the constructs.

2.3 | Internet capabilities, product innovation, and process innovation

We argue that firms in the Balkan countries use Internet capabilities to enhance their innovation performance for similar reasons to firms in developed countries. First, communication capability helps coordinate with buyers and stakeholders (Bianchi et al., 2017; Jean & Kim, 2020; Wu et al., 2016). On the one hand, this capability allows firms to rapidly comprehend buyers' preferences and needs, which effectively speeds up the development of new products and processes (Sawhney et al., 2005). Frequent communication with clients encourages buyers' involvement in developing new products and processes. Consequently, firms can access external knowledge possessed by buyers that helps improve product and process development based on knowledge sharing and acquisition (Wu et al., 2016).

On the other hand, it also enhances business relations with other stakeholders and firms in different geographical locations by minimizing communication barriers (Glavas & Mathews, 2014; Loane, 2006; Ruzzier et al., 2006). Internet technology has been proven to be a cost-effective communication method, unlike traditional communication methods (Glavas & Mathews, 2014; Paunov & Rollo, 2016). It is considered a tool for communication with different business players such as suppliers, where they can learn about new technological opportunities and consequently assist in evaluating new product and process innovation (Paunov & Rollo, 2015, 2016). Turning to firms in Balkan countries, it is clear that Internet capabilities heavily assist local firms in interacting with their stakeholders and are an essential and efficient way to learn advanced technologies due to the lack of abundant sources of finance and highly skilled personnel.

Second, platform capability performs primary innovation functions, such as product showcasing, aggregation, matching, and virtual testing (Grewal et al., 2001; Jean & Kim, 2020; Kaplan & Sawhney, 1999; Wu et al., 2016). Showcasing services help firms promote and communicate their value propositions to customers, consequently making significant changes in the products, processes, and business models (Pagani, 2013). The showcasing and aggregation functions partially overlap with the role of communication capabilities. The aggregation function gathers many buyers and sellers to better and more quickly understand customers' needs. Furthermore, the matching function helps firms understand the willingness of customers to pay and improve pricing strategies to respond to their preferences. Moreover, the virtual environment enables buyers to contribute their innovation ideas flexibly throughout the entire new product and process development stage. Plenty of online techniques allow customers to propose their suggestions and ideas for new products and processes through the suggestion box and advisory panels (Sawhney et al., 2005), implementing direct customer participation in designing and developing new products and processes.

Third, enhanced Internet and broadband connections demonstrate the high importance of platform transactions and communications, which are the backbone of ensuring the fluency of the new product and process development stage (Loane, 2006). Besides, firms can realize efficiencies resulting from a high and robust connection capability (Bouncken & Barwinski, 2021). Such a strong capability enables firms to integrate various digital resources to back-end operations, leading to more efficient delivery and organizational processes (i.e., product and process innovation) (Coreynen et al., 2017). A higher level of productivity and efficiency are particularly beneficial for firms by reducing their operating costs while accelerating product and process outputs (Bharadwaj et al., 2013; Horváth & Szabó, 2019; Matt et al., 2015). Therefore, connection capabilities effectively boost the synergy between resources to accentuate value creation changes in the organizational structures, causing new product development and process reconfiguration (Neirotti et al., 2017).

Internet capabilities (i.e., communication, platform, and connection) enable buyers and sellers to communicate and share new ideas, knowledge, and information, which fosters business processes, reduces operating and transaction costs, and consequently benefits new process and product development (Jean & Kim, 2020; Yousaf et al., 2021). Therefore, we propose the following hypotheses:

H1. Internet capabilities have a positive relationship with product innovation in the Balkan countries.

H2. Internet capabilities have a positive relationship with process innovation in the Balkan countries.

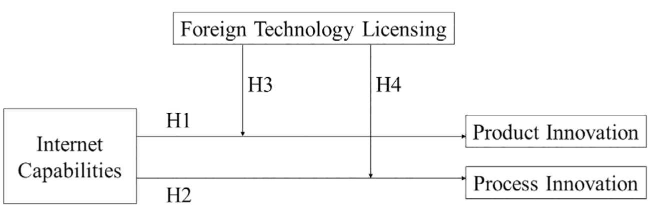

FIGURE 1 Research framework

2.4 | The moderating role of foreign technology licensing

Foreign technology licensing refers to acquiring foreign technology, which is regarded as the primary driver for innovation (Fu et al., 2016; Kim, 1990; Zahra et al., 2000). However, the Balkan countries have some major features that are not accounted for by national innovation system theorists, similarly to developing countries: (1) weak and unstable intensities of knowledge production and knowledge spillovers in the domestic environment (Acs & Virgill, 2010; Ernst, 2002); (2) limited domestic resources and opportunities for local firms to build an innovation system (Lall, 2000). Such a hostile environment would push local firms to learn and build innovation capabilities depending on international knowledge sources (Abubakar et al., 2018; Ernst, 2002). Therefore, we argue that firms in Balkan countries that emphasize licensed foreign technologies are expected to more significantly influence the relationship between Internet capabilities and innovation performance than those that do not have foreign licensed technologies. We provide several reasons in subsequent paragraphs.

First, the acquisition of the foreign technology enhances productivity, improves firms' technology, and increases the potential to innovate (Guadalupe et al., 2012) because it facilitates access to mature technological inputs not available in the domestic environment (Foss et al., 2013; Wang & Li-Ying, 2015). One example is a firm at the frontier of automotive parts manufacturing in the Balkan countries, called MEI TA Europe, located in Serbia. This firm licensed a large amount of advanced technology from German automobile sectors, which enabled the company to launch innovations that have subsequently made MEI TA one of the region's pioneers in automotive parts, engine parts, and general industrial parts. Similarly, this gives other firms in Balkan countries greater flexibility to innovate new processes and products that rely on superior technologies (Abubakar et al., 2018), in which external technology strengthens the relationship between Internet capabilities and innovation performance.

Second, based on the theories of international cooperation and knowledge spillover, the implementation of external technology also allows firms to expand their knowledge base through the accompanying support, the necessary training, and the related technical assistance that in turn improve their technological and innovative capabilities and eventually build their own technological capabilities (Wang & Li-Ying, 2015; Wang & Zhou, 2013). Hence, many companies in developing markets learn advanced technologies through foreign licensing (Gregorič et al., 2020; Luo & Tung, 2007). Further, it is also essential for firms in developing markets to follow up the technological advances and enhance their innovation activities. Along this vein, foreign technology licensing is deemed to be valuable in accessing state-of-the-art technology and, consequently, helps augment the hypothesized positive effects of Internet capabilities on innovation (Leone & Reichstein, 2012; Lin & Luan, 2020).

In short, foreign technology licensing plays a vital role in strengthening the relationship between Internet capabilities and innovation. Access to foreign technology and external knowledge allows the firms in the Balkan countries to enhance firms' innovative activities (Glavas & Mathews, 2014; Li et al., 2010). Based on the aforementioned arguments, we propose the following hypotheses:

> **H3.** Foreign technology licensing positively moderates the relationship between Internet capabilities and product innovation in the Balkan countries.

> **H4.** Foreign technology licensing positively moderates the relationship between Internet capabilities and process innovation in the Balkan countries.

3 | METHODOLOGY

3.1 | Sample and design

To test the hypotheses, the study collected cross-sectional firm-level data in Balkan countries from the World Bank Enterprise Survey (WBES), following the approaches of Hudson et al. (2012), Nguyen and Jaramillo (2014), and Adegboye and Iweriebor (2018), and using stratified random sampling of business owners and senior managers. The survey was carried out using a harmonized questionnaire, enabling pooling of the large-scale firm-level observations across different countries. This dataset could also be used for more advanced statistical analysis. As a result, the WBES database is widely used in many empirical studies on developing countries (Abubakar et al., 2018; Alby et al., 2012; Page & Söderbom, 2015).

After removing all missing data and answers with "do not know," a total of 12,093 firm-level observations covering the period 2007–2019 met this criterion across 10 Balkan countries: Albania, Bosnia, and Herzegovina, Bulgaria, Croatia, Kosovo, Montenegro, North Macedonia, Romania, Serbia, and Slovenia. No universal consensus has been reached concerning the components of Balkan countries. In this study, therefore, we focus on the 10 countries listed, as they represent most of the Balkan region, though small portions of Greece and Turkey are also included in the definition thereof.[2] The distribution of firm-level observations across countries is shown in Table 1, in which Bulgaria accounts for the most (19.58%) and Montenegro the least (3.44%).

[2]https://www.britannica.com/place/Balkans.

TABLE 1 Sample descriptive across countries

Country	Freq.	Percent	Cum.
Albania	1041	8.61	8.61
Bosnia and Herzegovina	1083	8.96	17.56
Bulgaria	2368	19.58	37.15
Croatia	1397	11.55	48.70
Kosovo	743	6.14	54.84
Montenegro	416	3.44	58.28
North Macedonia	1086	8.98	67.26
Romania	1895	15.67	82.93
Serbia	1109	9.17	92.10
Slovenia	955	7.90	100.00

3.2 | Variable measurements

3.2.1 | Dependent variables

Following Abubakar et al. (2018) and Altomonte et al. (2013), this study defines innovation as subsequently explained.

Product Innovation: The WBES requires respondents to answer the following question: "During the last three years, has the firm introduced new or improved products or services?" We code an answer of Yes as 1 and No as 0. In our sample, 35% of respondents have introduced new or improved products or services.

Process Innovation: The measure of process innovation is similar to the previous measure. Respondents answered the following question. "During the last three years, has the firm introduced any new or improved processes?" We continue to use 1 as Yes and 0 as No, wherein 24% have developed new or improved processes.

3.2.2 | Independent variables

We define the Internet capabilities as taking full advantage of Internet technology for business activities, improving the transference of knowledge and efficiency of market transactions, constructing domestic and international networks, and reducing information asymmetry (Glavas & Mathews, 2014; Jean & Kim, 2020). Therefore, we disentangle Internet capabilities into three parts: connection capability, communication capability, and platform capability. The three capabilities are dummies, and details are subsequently shown.

Connection capability: We take the value of 1 of the firms with a high-speed and broadband Internet connection on its premises, otherwise 0 as No. Among our sample, 81% of firms have a great connection on their premises.

Communication capability: Taking a value of 1 if the firm is currently communicating with clients and suppliers using the Internet and 0 if not; 85% communicate with their stakeholders through the Internet.

Platform capability: Taking a value of 1 if the firm has a website and 0 if not, where 64% have a website for online interaction and transactions.

3.2.3 | Moderating variable

Regarding the measurement of our moderating variable, foreign technology licensing, we code 1 if the firm uses technology licensed from a foreign-owned company and 0 if not. Among our sample, only 18% have collaborated with foreign companies regarding technology.

3.2.4 | Control variables

To ensure the hypotheses are rigorously tested, this study used internal and external levels of control variables that may influence firm innovation in Balkan countries.

At first, regarding the internal level controls, age and size were controlled because of their potential influence on innovation performance (Acs & Audretsch, 1987; Hansen & Bowey, 1992). Age is measured by the number of years between the company's inception and the survey year. On average, our sample firms have operated for 18.00 years. What is more, the number of full-time employees measures firm size in the survey year. On average, our sampled firms have around 233.94 full-time employees. Subsequently, firm-level research and development (R&D) is also controlled following Abubakar et al. (2018). The WBES measures R&D using the following question: “During the last fiscal year, did the firm spend on formal R&D activities?” We code 1 if the answer is Yes, and 0 if No. Only 13% of the observations used formal R&D activities in our sample.

In terms of the external level controls, the obstacles to an inadequately educated workforce and access to finance are controlled because these are negative factors to innovation in developing countries. An inadequately educated workforce represents underdeveloped higher education institutions in developing countries, and the access to finance refers to challenging firms. To measure these two variables, interviewees are required to answer the perception of an inadequately educated workforce and their access to finance. We code 0 = No obstacle, 1 = Minor obstacle, 2 = Moderate obstacle, 3 = Major obstacle, and 4 = Very severe obstacle. On average, the sampled firms regard an inadequately educated workforce and access to finance as minor to moderate obstacles, where obstacles to the educated workforce are more severe than access to finance.

In addition, the degree of industrial technology was also added as a control because R&D intensity across industrial sectors can affect firms' innovation performance (Abubakar et al., 2018; Acs & Audretsch, 1987; Hughes & Wood, 2000). High-technology industries facilitate knowledge spillovers between firms and increase learning and product or process innovation capacity (Glaeser et al., 1992). Therefore, we classify the industrial sectors into two groups: medium to high-tech and low-tech. More specifically, we code 1 for the low-tech sector and 0 for medium to high-tech industries; this is based on the International Standard Industrial Classification (ISIC) codes recognized by OECD (2011) that define low-tech, medium-tech, and high-tech sectors (see in Table 2); 81% of our firm-level observations belong to low-tech sectors.

Furthermore, studies found the rate of innovation is higher in more popular cities (Lobo & Strumsky, 2008; Orlando & Verba, 2005; Sedgley & Elmslie, 2004) because the inputs needed for innovation could be supplied at any time, and are more abundant and cheaper. Moreover, the effects of knowledge spillover could be intensified in cities with larger populations. To measure the different city sizes, firms have to report the size of the city in which they operate. Consequently, we code 1 = Capital city, 2 = City with a population over 1 million other than the capital city, 3 = 0.25 to 1 million, 4 = 0.05 to 0.25 million, and 5 = less than 0.05 million. On average, surveyed firms are located in cities between 0.05 and 1 million.

Lastly, we still account for the macro country-level factors: GDP annual growth, annual population growth, and the rate of Internet coverage in the country from World Development Indicators. On average, countries during the survey period hold a 1.99% annual growth rate in GDP and annual population decreases of 0.34%. The rate of Internet coverage is around 55.65% across different countries and years. Table 3 describes all of the descriptive variable information.

3.3 | Estimation model

According to the binary dependent variables (product and process innovation), a random-effect Probit model is used to estimate the hypothesized effects through maximum likelihood techniques (Hagsten & Kotnik, 2016; Stock & Watson, 2012). Moreover, random-effect analysis allows regression coefficients to vary across countries, assuming unobserved country-specific effects are randomly distributed with a mean of zero and constant variance. The estimation model is:

$$Y_i^* = \beta_0 + \beta_i Z_i + \varepsilon_i$$

$$Y_i = 1 \; if Y_i^* > 0 \;\; \text{otherwise} \; Y_i = 0$$

TABLE 2 Sector classification

Degree of tech	Sectors
High-tech	Aircraft and spacecraft; Pharmaceuticals; Office, accounting and computing machinery; Radio, TV and communications equipment; Medical, precision and optical instruments.
Medium-tech	Electrical machinery and apparatus; Motor vehicles, trailers and semi-trailers; Chemicals excluding pharmaceuticals; Railroad equipment and transport equipment; Machinery and equipment. Building and repairing of ships and boats; Rubber and plastics products; Coke, refined petroleum products and nuclear fuel; Other non-metallic mineral products; Basic metals and fabricated metal products.
Low-tech	Manufacturing, Recycling; Wood, pulp, paper, paper products, printing and publishing; Food products, beverages and tobacco; Textiles, textile products, leather and footwear.

Source: OECD (2011).

TABLE 3 Variables measurement and descriptive

Variables	Measurement	Observations	Mean	SD	Min	Max
Dependent variable						
Product innovation	During the last 3 years, has the firm introduced new or improved products or services? 0 = No and 1 = Yes	7514	0.35	0.48	0	1
Process innovation	During the last 3 years, has the firm introduced any new or improved process? 0 = No and 1 = Yes	7462	0.24	0.43	0	1
Independent variable						
Internet capabilities	Does the firm currently communicate with clients and suppliers by Internet? 0 = No and 1 = Yes	7788	0.85	0.36	0	1
	Does the firm has its own website 0 = No and 1 = Yes	12,024	0.64	0.48	0	1
	Does the firm have a high-speed and broadband Internet connection on its premises? 0 = No and 1 = Yes	4691	0.81	0.39	0	1
Moderating variable						
Foreign technology licensing	Does the firm use technology licensed from a foreign -owned company? 0 = No and 1 = Yes	9607	0.18	0.39	0	1
Firm internal controls						
Age	Firm age in years	12,000	18.00	15.02	1	310
Firm size (Ln)	Number of full time employees in the survey year (Ln)	11,974	3.37	1.31	0	14.33
Firm level R&D	During the last fiscal year, did the firm spend on formal R&D activities? No = 0 and Yes = 1	7517	0.13	0.34	0	1
Firm external controls						
Inadequately educated workforce	How much of an obstacle: inadequately educated workforce? 0 = No obstacle; 1 = Minor obstacle; 2 = Moderate obstacle; 3 = Major obstacle; 4 = Very severe obstacle	11,916	1.36	1.36	0	4
Access to finance	How much of an obstacle: access to finance? 0 = No obstacle; 1 = Minor obstacle; 2 = Moderate obstacle; 3 = Major obstacle; 4 = Very severe obstacle	11,718	1.23	1.29	0	4
Degree of sector tech	Industrial sector's degree of technology. 0 = medium to high-tech sectors; 1 = low-tech sectors	12,093	0.81	0.39	0	1
Size of cities	Size of the city firms operate in. 1 = Capital city; 2 = City with population over 1 million other than capital city; 3 = 0.25 to 1 million; 4 = 0.05 to 0.25 million; 5 = less than 0.05 million	11,088	3.74	1.29	1	5
GDP annual growth	GDP growth (annual %) in the fiscal year	12,093	1.99	3.43	−7.55	6.56
Population annual growth	Population growth (annual %) in the fiscal year	12,093	−0.34	0.51	−1.75	0.90
Internet cover	Individuals using the Internet (% of population)	10,990	55.65	16.90	15.03	83.11

where Y_i^* represents the probability of introducing an improved product or process and the observed variable Y_i takes a value of 1 if the firm introduces an improved product or process, otherwise it takes a value of 0. Subscript i denotes firm. Moreover, β_0 is the intercept and Z_i is the set of predictors, interactions and controls in which β_i stands for the vector of the coefficients for this set.

To increase the robustness of the results, we separately estimated the effects of Internet capabilities on product and process innovation (Tables 5 and 6). The procedure is the same in both tables. First, we run the regression only with controls shown in Model 1. Then, we add connection capability, including a range of controls presented in Model 2. Model 3 presents the moderating role of foreign technology licensing on the relationship between connection capability and product and process innovation. Models 4 and 5 repeat the process of connection capability

TABLE 4 Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Product innovation	1							
(2) Process innovation	0.39*	1						
(3) Connection Capability	0.14*	0.10*	1					
(4) Platform Capability	0.20*	0.16*	0.38*	1				
(5) Communication Capability	0.16*	0.13*	0.51*	0.42*	1			
(6) Foreign technology licensing	0.16*	0.16*	0.07*	0.14*	0.09*	1		
(7) Firm Age	0.09*	0.08*	0.07*	0.16*	0.10*	0.01*	1	
(8) Firm Size (Ln)	0.13*	0.16*	0.23*	0.28*	0.26*	0.16*	0.30*	1
(9) Firm Level R&D	0.30*	0.29*	0.10*	0.18*	0.13*	0.20*	0.09*	0.19*
(10) Inadequately educated workforce	0.07*	0.10*	0.05*	0.07*	0.07*	0.05*	−0.00	0.15*
(11) Access to finance	−0.03*	0.01	0.01	−0.03*	0.01	0.05*	−0.02	−0.04*
(12) Degree of sector tech	−0.10*	−0.07*	−0.07*	−0.12*	−0.10*	−0.04*	−0.07*	−0.07*
(13) Size of cities	0.00	0.00	0.07*	−0.01	0.03	−0.05*	0.05*	−0.07*
(14) GDP annual growth	0.00	0.03*	0.03*	0.00	0.00	0.01	−0.06*	−0.03*
(15) Population annual growth	0.10*	0.06*	0.00*	0.05*	−0.04*	0.04*	0.08*	−0.04
(16) Internet Cover	0.08*	−0.00	0.23*	0.14*	0.09*	−0.03*	0.16*	−0.00
	(9)	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**(16)**
(9) Firm Level R&D	1							
(10) Inadequately educated workforce	0.04*	1						
(11) Access to finance	0.01	0.22*	1					
(12) Degree of sector tech	−0.14*	−0.07*	−0.01	1				
(13) Size of cities	0.02	−0.12*	−0.09*	−0.02	1			
(14) GDP annual growth	−0.04*	0.11*	−0.06*	−0.07*	−0.03*	1		
(15) Population annual growth	0.08*	−0.13*	−0.01*	0.01	0.06*	−0.15*	1	
(16) Internet Cover	0.06*	−0.09*	−0.15*	−0.03*	0.37*	0.05*	0.31*	1

*$p < 0.05$.

to test the direct effect of communication capability and its interaction with foreign technology licensing. Lastly, Models 6 and 7 are the tests of platform capability and its interaction with the moderating variable, respectively.

4 | RESULTS

In order to avoid the multicollinearity concerns, Table 4 presents pairwise correlations, and the values reported show a lower correlation between the variables (correlation value <0.5). To ensure the non-multicollinearity issue, we still conducted the variance inflation factor (VIF) analysis, and the corresponding values are all below 10, specifically from 1 to 2.

Table 5 outlines the results from the Probit model with product innovation as the dependent variable. Three dimensions of Internet capabilities, connection capability ($\beta = 0.38, p < 0.01$, Model 2), communication capability ($\beta = 0.43, p < 0.01$, Model 4), and platform capability ($\beta = 0.35, p < 0.01$, Model 6), have a positive direct effect on product innovation, confirming our H1. Regarding the moderating role of foreign technology licensing, Models 3, 5, and 7 present the related interaction effects with three dimensions, respectively. The results tell us that foreign technology licensing could not moderate the relationship between Internet capabilities and product innovation because of non-significant interaction effects ($\beta_{connection*FTL} = -0.03, p > 0.10$, Model 3; $\beta_{Communication*FTL} = -0.44, p > 0.10$, Model 5; $\beta_{Platform*FTL} = -0.17, p > 0.10$, Model 7), which do not support H3.

Moreover, Table 6 presents the results from the Probit model with process innovation as the dependent variable. We also found that three Internet capabilities positively relate with process innovation, thus supporting H2, even though the positive effects of connection capability ($\beta = 0.20, p < 0.10$, Model 2) and communication capability ($\beta = 0.22, p < 0.10$, Model 4) are weaker than platform capability ($\beta = 0.22, p < 0.01$, Model 6). With regard to the moderating role of foreign technology licensing, the results remain the same, that is, there are no moderating effects of foreign technology licensing on the relationship between Internet capabilities and process innovation. The interaction effects are shown in

TABLE 5 Regression model (dependent variable: Product innovation)

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
Internal controls							
Firm age	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.94)	(0.83)	(0.76)	(0.76)	(0.72)	(0.58)	(0.68)
Firm size (Ln)	0.06***	0.03	0.03	0.04	0.03	0.03**	0.03
	(4.03)	(1.19)	(0.94)	(1.31)	(1.05)	(2.23)	(1.62)
Firm level R&D	0.99***	1.13***	1.09***	1.13***	1.09***	0.96***	0.91***
	(18.02)	(12.70)	(12.16)	(12.70)	(12.20)	(17.26)	(16.11)
External controls							
Inadequately educated workforce	0.08***	0.05*	0.05*	0.04	0.04	0.08***	0.08***
	(5.29)	(1.76)	(1.71)	(1.60)	(1.55)	(5.11)	(5.06)
Access to finance	−0.06***	−0.02	−0.02	−0.02	−0.02	−0.06***	−0.06***
	(−3.86)	(−0.69)	(−0.86)	(−0.72)	(−0.84)	(−3.81)	(−4.01)
Degree of sector tech	−0.25***	−0.45***	−0.43***	−0.43***	−0.41***	−0.22***	−0.21***
	(−5.55)	(−5.49)	(−5.22)	(−5.32)	(−5.07)	(−4.75)	(−4.41)
Size of cities	−0.06***	−0.02	−0.01	−0.03	−0.02	−0.04*	−0.04*
	(−2.61)	(−0.36)	(−0.23)	(−0.45)	(−0.33)	(−1.88)	(−1.79)
GDP annual growth	−0.12**	0.33**	0.40***	0.27*	0.33**	−0.12**	−0.12**
	(−2.66)	(2.29)	(2.63)	(1.80)	(2.16)	(−2.52)	(−2.51)
Population annual growth	0.51***	1.60***	1.74***	1.54***	1.65***	0.49***	0.50***
	(5.88)	(2.78)	(3.00)	(2.67)	(2.87)	(5.51)	(5.60)
Internet cover	−0.06***	0.02	0.03	0.00	0.02	−0.06***	−0.06***
	(−5.61)	(0.60)	(0.93)	(0.17)	(0.52)	(−5.31)	(−5.33)
Internet capabilities							
Connection capability		0.38***	0.37***				
		(3.61)	(3.30)				
Connection capability*Foreign technology licensing			−0.03				
			(−0.09)				
Communication Capability				0.43***	0.44***		
				(3.61)	(3.49)		
Communication capability*Foreign technology licensing					−0.44		
					(−1.10)		
Platform capability						0.35***	0.35***
						(8.11)	(7.68)
Platform capability*Foreign technology licensing							−0.17
							(−1.39)
Foreign technology licensing			0.36		0.74*		0.46***
			(1.13)		(1.91)		(4.00)
Constant	3.84***	−1.87	−2.60	−1.12	−1.88	3.09***	3.10***
	(5.31)	(−1.03)	(−1.37)	(−0.61)	(−0.98)	(4.70)	(4.66)
Country dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	−3201.09	−1164.21	−1150.98	−1164.78	−1151.40	−3162.71	−3124.92
LR chi^2	904.11***	354.59***	368.08***	354.19***	367.98***	971.55***	1017.01***
Pseudo R^2	0.12	0.13	0.14	0.13	0.14	0.13	0.14
Observations	5684	2162	2151	2163	2152	5676	5651

Note: *z*-Statistics in parentheses.
***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. The effects of year and country are controlled in all regression models.

TABLE 6 Regression model (dependent variable: Process innovation)

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
Internal controls							
Firm age	0.00	−0.00	−0.00	−0.00	−0.00	0.00	0.00
	(0.56)	(−0.04)	(−0.00)	(−0.10)	(−0.01)	(0.38)	(0.70)
Firm size (Ln)	0.13***	0.10***	0.10***	0.11***	0.10***	0.11***	0.10***
	(7.77)	(3.41)	(3.24)	(3.53)	(3.35)	(6.66)	(5.96)
Firm level R&D	0.86***	1.21***	1.17***	1.20***	1.17***	0.84***	0.79***
	(16.05)	(13.29)	(12.80)	(13.29)	(12.84)	(15.54)	(14.37)
External controls							
Inadequately educated workforce	0.09***	0.08***	0.07***	0.07***	0.07**	0.08***	0.09***
	(5.37)	(2.74)	(2.66)	(2.65)	(2.59)	(5.24)	(5.31)
Access to finance	−0.02	0.05*	0.04*	0.04*	0.04*	−0.03	−0.03*
	(−1.54)	(1.86)	(1.74)	(1.85)	(1.79)	(−1.52)	(−1.86)
Degree of sector tech	−0.09*	−0.15*	−0.14	−0.14	−0.14	−0.07	−0.06
	(−1.76)	(−1.75)	(−1.61)	(−1.63)	(−1.51)	(−1.36)	(−1.22)
Size of cities	−0.02	−0.01	−0.01	−0.02	−0.01	−0.01	−0.01
	(−0.96)	(−0.26)	(−0.20)	(−0.28)	(−0.20)	(−0.50)	(−0.48)
GDP annual growth	−0.02	0.96***	0.98***	0.92***	0.95***	−0.01	−0.01
	(−0.29)	(4.32)	(4.38)	(4.14)	(4.20)	(−0.19)	(−0.18)
Population annual growth	0.63***	2.78***	2.89***	2.76***	2.86***	0.61***	0.63***
	(6.60)	(4.47)	(4.62)	(4.45)	(4.58)	(6.41)	(6.54)
Internet cover	−0.06***	0.07*	0.07*	0.06	0.07	−0.06***	−0.06***
	(−5.08)	(1.68)	(1.72)	(1.51)	(1.56)	(−4.94)	(−4.92)
Internet capabilities							
Connection capability		0.20*	0.21*				
		(1.82)	(1.78)				
Connection capability*Foreign technology licensing			−0.13				
			(−0.41)				
Communication Capability				0.22*	0.26**		
				(1.73)	(1.96)		
Communication capability*Foreign technology licensing					−0.63		
					(−1.53)		
Platform capability						0.22***	0.22***
						(4.79)	(4.40)
Platform capability*Foreign technology licensing							−0.16
							(−1.21)
Foreign technology licensing			0.40		0.87**		0.44***
			(1.25)		(2.17)		(3.69)
Constant	2.55***	−6.67**	−6.88**	−6.26**	−6.53**	2.32***	2.34***
	(3.55)	(−2.38)	(−2.43)	(−2.22)	(−2.29)	(3.21)	(3.21)
Country dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	−2712.76	−960.03	−954.50	−960.98	−954.52	−2697.02	−2666.82
LR chi^2	771.38***	446.45***	452.61***	447.43***	455.42***	796.19***	830.66***
Pseudo R^2	0.12	0.19	0.19	0.19	0.19	0.13	0.13
Observations	5654	2157	2148	2158	2149	5646	5624

Note: *z*-statistics in parentheses.
***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. The effects of year and country are controlled in all regression models.

detail: $\beta_{\text{connection}*\text{FTL}} = -0.13, p > 0.10$, Model 3; $\beta_{\text{Communication}*\text{FTL}} = -0.63, p > 0.10$, Model 5; $\beta_{\text{Platform}*\text{FTL}} = -0.16, p > 0.10$, Model 7. These results do not support H4, in line with the moderating result in H3.

As for the control variables and internal factors, firm size and R&D activities positively affect product and process innovation, while firm age has no significance. The findings align with the literature on the determinants of innovation (Griliches, 1979; Radas & Božić, 2009). Regarding the effects of external factors, some variables behave differently in product and process innovation. For example, access to finance and the size of cities do not influence process innovation, but they are negatively associated with product innovation. When it is harder to obtain finance, it is less likely for internal motivation to lead to product innovation.

Furthermore, the degree of sector tech negatively affects product and process innovation, suggesting that firms in low-tech sectors will be less likely to innovate than companies in high-tech sectors. An inadequately-educated workforce positively influences product and process innovation, implying unskilled and uneducated laborers push firms to innovate in products and processes. As for the country-level factors, GDP annual growth negatively affects product innovation but shows no influence on process innovation. Annual population growth is positively associated with both product and process innovation. Unexpectedly, the rate of Internet uses in the country harms both product and process innovation. Tables 5 and 6 provide all the details.

5 | DISCUSSION

Our research adds new knowledge to the literature from the perspective of emerging economies. The previous literature has examined digital technologies and their role in enhancing innovation, particularly companies in developed countries or mutual market economies (Verhees & Meulenberg, 2004). However, few studies have focused on developing countries. Instead, they have explored the direct effect of foreign licensed technology but overlooked its moderating role. We started with the fundamental concept, namely Internet capabilities, product innovation, process innovation, and foreign technology licensing, due to the liability surrounding newness concept issues that continue to obscure this research field (Urbinati et al., 2018). Then, we conceptually and empirically explored the direct effect of Internet capabilities on product and process innovation in the Balkan countries and the moderating role of foreign technology licensing.

5.1 | Key findings

This study produces two key findings. First, our finding contributes to the direct link between Internet capabilities and innovation outcome at the theoretical level. Regarding the relationship between Internet capabilities and innovation, the results indicate a positive effect of Internet capabilities on product and process innovation in the Balkan countries that are in line with findings in developed countries. Our findings confirm the results of prior studies conducted by Yu et al. (2016), and Adu-Danso and Abbey (2020), which suggest that Internet capabilities enhance product and process innovation. In Balkan countries, we can say that by integrating Internet capabilities that represent basic digital and information systems infrastructure, firms may achieve unique product and process innovation based on the positive effects of Internet capabilities.

The three dimensions of Internet capabilities perform multiple functions and complement each other. For instance, communication capabilities may facilitate business transactions, decision-making, and interactions with buyers and suppliers (Fichman et al., 2014). Meanwhile, platform capabilities have also reduced transaction, distribution, and research costs (Pagani, 2013). A rapidly increasing number of firms have utilized this type of digital platform over the last decade to innovate, and the widespread use of the platform has increased its role in many companies' innovation activities. Connection capability is an essential digital infrastructure and supports communication and platform operations (Jean & Kim, 2020). The aforementioned Internet capabilities remarkably affect and facilitate innovation in many different industries such as the education, hospitality, health care, and financial industries (Yousaf et al., 2021). They help reinforce the new product and process development in the Balkan countries (Ciriello et al., 2018; Yoo et al., 2010).

Second, we contribute to the moderating role of foreign technology licensing. Indeed, foreign technology licensing does not significantly moderate the relationship between Internet capabilities and product and process innovation, although a surprising positive direct effect of foreign technology exists. One possible reason for this could be that the benefits of the Internet and foreign technology licensing may overlap. The technology-licensed agreements between local and foreign companies could promote the technical improvements necessary for innovation based on knowledge spillover and management. However, strong Internet capabilities make it easier and faster for firms to acquire external knowledge at a lower cost for innovation activities than technology-licensed contracts, and the Internet capabilities can easily replace the advantages obtained from licensing agreements.

Moreover, there is a risk for firms that deliver the licensed technology due to the possibility of expropriation by the local government. Additionally, reverse engineering by local competitors could also potentially decrease its effect due to unsound law and overregulation. As a result, it is difficult to promote the positive effects of Internet capabilities using foreign technology licensing.

5.2 | Limitations and future research lines

As with most studies, our study is not free from limitations. First, the study investigates the relationship between Internet capabilities and product and process innovation in enterprises in general. Future research could differentiate the large firms from small- and medium-sized enterprises regarding the effects of Internet capabilities on innovation to obtain a deeper understanding thereof. Moreover, the study could also follow how the main effects evolve in specific Balkan countries.

The second limitation is that the study only considers some specific variables, suggesting more relevant proxies could be used for both predictors and moderating variables. For example, considering internationalization performance and consumer satisfaction arising from Internet capabilities, the aforementioned variables might assist firms in developing a more comprehensive framework. Moreover, alliances derived from Internet capabilities help ensure that new knowledge could be translated into real innovation, contributing to economic development. More research is encouraged on Internet capabilities to understand its role in innovation performance. Besides this, further studies might integrate learning orientation into the research framework; indeed, some researchers have emphasized the importance of learning orientation in enhancing innovation capability (Barczak & Wilemon, 2003; Damanpour, 1991).

Finally, our research setting is designed to be within the Balkan countries, a special and important area of development. It hence provides some directions for future studies concerning the developing markets and advances our understanding of the effects of Internet capabilities in the context of other developing countries.

6 | CONCLUSIONS AND IMPLICATIONS

This paper provides a novel contribution to the Internet capabilities and innovation literature, particularly regarding how the link might differ according to foreign technology licensing, using cross-sectional data from Balkan countries, responding to the call that there is scarce information available about these countries. In doing so, our study decomposes Internet capabilities to individually examine the role of each component (platform, communication, and connection capabilities) on process and product innovation. The paper also enriches existing research on knowledge spillover by adding an essential but previously neglected moderating factor (foreign technology licensing) to the relationship between Internet capabilities and innovation outcomes.

The study also has implications for managers and policymakers interested in promoting innovation. First, our study provides managers with helpful guidance regarding Internet capabilities. For instance, besides entrepreneurial and market orientation, Internet capabilities directly enhance product and process innovation outcomes. Findings suggest that improving the strength of the three dimensions of Internet capabilities may be helpful in the innovation outcome. Significantly, Internet capabilities help achieve product and process innovation and help to create alliances (Yu et al., 2016). Subsequently, agreements with foreign companies regarding licensed technology may not strengthen the main effects of Internet capabilities on innovation outcomes. This might lead firms to take full advantage of the Internet to explore external experience, knowledge, and technology that have a high relative cost to make licensed technology agreements.

Second, the findings have implications for the design of governmental policies to promote innovation in business in Balkan countries. For example, the results illustrate the necessity of Internet capabilities in firms. This outcome is significant because Balkan countries' economies are in a transition stage. The domestic base supporting industries, institutional infrastructure, and customer sophistication are still within the developing phase, which requires time to fully develop (Rachidi & El Mohajir, 2020; Rehman et al., 2019). During the transitional phase, policymakers from Balkan countries could focus on access to capital through digital infrastructure to promote innovative capabilities.

CONFLICT OF INTEREST

The authors have no relevant financial or non-financial interests to disclose.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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