



## RESEARCH ARTICLE

## A Quality Management Approach of Relationship between the Innovation Index and the Business 2 Consumer E-Commerce Index, and a Comparative Analysis for Western Balkans

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**ABSTRACT**

The aim of the study is to explain relations between innovation index and B2C E-Commerce index globally, as well as the position of Western Balkan countries for both indexes, since innovation, B2C E-commerce issues, and quality management, have been subject of increasing interest worldwide. Methodologically, using Global Innovation Index data and B2C E-commerce index, this study conducted exploratory correlative and regressive analysis to find links between innovation and B2C E-commerce index, while in terms of descriptive statistics, a comparison between Western Balkans and the rest of the globe has been conducted. The main finding was there are statistically verified relationships between innovation and B2C E-commerce, means ISO standards generally, and ISO 56000 standards family (innovation) particularly are necessary in the age of B2C E-commerce, to achieve competitive advantage. This study suggests successful organizations should invest in quality management, B2C e-commerce, and innovation to get a competitive edge, while key recommendation is, businesses can improve innovation and B2C E-commerce activities, processes, and procedures, as well as economies globally to gain a competitive advantage, by utilizing ISO standards, ISO 56000 family of standards, particular, while descriptive statistics on the Western Balkans economies shows EU integration requires a major effort. As a contribution, the study explores consequences of creating a potent tool that blends innovation, B2C e-commerce, and quality control, obtaining competitive edge, while addressing acknowledged requirement to examine the substantial connections between innovation, B2C E-commerce, ISO 56000 family of standards, and descriptive data for a region (the Western Balkans), utilizing correlation and regression analysis, is its practical implications.

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**INTRODUCTION**

While the e-commerce landscape is changing, the key challenge is to adapt and combine these trends towards a competitive world while making great inventive strides towards digitalization tendencies and improving standardization approaches. Strategic integration of digital technologies, data analysis, processes, and procedures is needed in this new normal and reality to improve all facets of corporate operations, stay ahead of the curve in terms of innovations, solve customer problems, and gain a competitive edge. Transformational approaches such as cloud-based ERP solutions, algorithmic merchandising, insights into customer behavior, automation, chatbots and artificial intelligence, immersive experiences, progressive web applications, augmented reality for informed

choices, etc. are some of the tactics that are reshaping the e-commerce industry and the challenges that face businesses.

Digital transformation within organizations is not without its difficulties. A significant obstacle is when different departments within an organization are not in sync with one another. The effective execution of digital transformation strategies might be impeded by inadequate inter-team communication and collaboration. Establishing clear goals and metrics to measure the success of digital transformation initiatives, encouraging cross-departmental collaboration and communication to ensure that all stakeholders are on the same page, investing in training and development programs to give employees the skills and knowledge needed to adapt to new technologies, and continuously assessing and adjusting strategies to ensure alignment with evolving business needs—all of which are components of quality management issues—are necessary to overcome this problem.

These days, a lot of businesses are using direct-to-consumer (D2C) marketing, eliminating middlemen and speaking with clients directly. Businesses are using contactless kiosks in response to the evolving retail environment to offer safer and more convenient shopping experiences. Data-driven personalization is becoming more popular, and businesses like Netflix and Amazon are setting the standard for individualized user experiences. Alternative payment methods like digital wallets and cryptocurrency are becoming more widely used. These options are incorporated for users by companies such as Shopify. The trend of consumers choosing the convenience of smartphone buying has led to an increase in mobile retail shopping. It is anticipated that business-to-business (B2B) e-commerce will rise significantly due to rising online purchasing and supply chain efficiency.

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Understanding each client's particular demands and objectives in detail is the foundation of digital transformation. To ensure a smooth transition to the digital future, we combine departmental divide-bridging, state-of-the-art technology solutions, and strategic planning. Through the application of cutting-edge technologies and tactics, digital transformation may improve revenue growth, customer engagement, and operational efficiency. Customers can engage with products in a virtual setting with augmented reality, which enhances their comprehension and bonding with the products. Developing personalized digital transformation strategies that support your company's goals and expedite the adaptation process. The way businesses operate and consumers shop is being drastically changed by new technology and techniques in the e-commerce sector.

Modern society rarely views the significant breakthroughs of the 20th century in retail and trade, such as supermarkets, self-service, bar codes, and reward systems, as such. Over several decades, change happened gradually; however, since the public internet was established in the 1990s, change has accelerated at an astounding rate. Only 25 years have passed since e-commerce took on its current form, yet in that time it has seen numerous significant revolutions. Not only did innovation create it, but it also keeps it going. An e-commerce company cannot afford to remain stagnant as innovation transforms the commercial and technological landscapes. Business must take advantage of these significant benefits. Although it frequently is, being innovative doesn't require you to be the trailblazer. It's also not always about the relationship with the customer. In terms of marketing, supply chains, inventory, customer engagement, transaction management, and after-sales service, it simply means realizing the countless potential it presents. Accepting innovation entails being prepared to spot ineffective procedures and either update or replace them, as well as explore new goods, services, and methods that will bolster your company's reputation, save costs, and increase profitability. Innovation varies depending on the type of business. Nowadays, e-commerce

encompasses such a wide range of product categories and niche markets that an effective strategy for a software as a service (SaaS) subscription provider would not be the same as one that works for a fashion shop. Every company needs to create a unique innovation road plan based on its size, goals, resources, and target market. When you believe your company has reached digital maturity, it's time to find the next move rather than put the brakes on.

The quality of the customer experience is the most crucial differentiator in the digital landscape for both B2B and B2C verticals, even though many of the innovations you deploy will have a direct influence on your internal procedures. Your goal should be to provide a flawless client experience, eliminating any potential areas of friction, fostering brand preference and trust, and promoting repeat business.

You must take immediate action to improve your e-commerce platform for mobile devices if it hasn't already. Websites, which were formerly the main instrument for e-commerce, are now only used in second place, with about 73% of transactions taking place on mobile devices. The 62% of consumers who claim that a bad mobile experience permanently deters them is an even more noteworthy statistic. Innovations like connecting with messaging apps and digital wallets, streamlining transaction times, and improving the readability and accessibility of content should all be taken into consideration.

Even though online buying is quick and easy, returning unwanted or inappropriate items has always been a big concern. Around 84% of consumers will not purchase from retailers with poor return policies, according to research. Given how easy it is to give pre-printed labels and QR codes, there is no need for this anymore. Additionally, there are numerous choices for return drop-off locations, as well as pickup services offered by a number of the major couriers.

Even something as basic as your website's performance can have a big impact. For better or worse, internet users have shorter attention spans than ever before, and they get impatient with pages that take a long time to load or are difficult to browse. Anything that might obstruct a customer's path around the exhibits would not be permitted in a real store, and an online retailer should act similarly.

The moment of buying is maybe the most significant of all. Users are naturally aware of security risks, therefore any errors, even small ones, such as error warnings or improperly loading payment pages, will raise suspicions about the reliability of the website.

Unless you have a dedicated team to look after issues such as these, then the simplest and most cost-effective way of implementing innovative improvements is to engage a company which provides ecommerce as a service (EaaS). Whatever ecommerce platform or software you use, an EaaS partner will have the expertise to provide you with all the benefits of perpetual innovation (Naughton. 2023).

Building an e-commerce strategy is the shortest way to improving online store's relationship with customers. It brings the systematic, methodical approach into marketing investments, and simplifies executive decision making. Most importantly, this is how a store's team can keep track of the long-term goals, while still delivering everyday objectives. Implementing innovation in retail takes a professional team of software developers, marketing experts, and business analysts. For example, creating data-based growth strategies for e-commerce stores and assist in bringing these objectives to life with creative innovations works nowadays very well ([Soloway Technologies. 2019](#)).

In a paper related the role of innovation in the relationship between digitalization and economic and financial performance, in a company-level research, authors argued innovation affects and the relationship between the digitalization of the company and its economic and financial performance, reviewing the cause-effect situation of this relationship (Fernández-Portillo, Almodóvar-González, Sánchez-Escobedo, Coca-Pérez. 2022)

In a paper related to innovation and e-commerce models, as essential in sustainable development globally, authors have argued that innovation and e-commerce are among the most important technology and innovation catalysts (Faccia, Le Roux, Pandey, 2023).

The three main drivers that underpin all aspects of e-commerce are technology improvements (1), social and legal difficulties and their implications (2), and business development and strategy (3). Compared to 20 to 30 years ago, there has been a noticeable increase in the previous ten years in

terms of IT advancements, innovation, business practices, marketing strategies, etc. We are only now starting to discern the outlines of a social and economic life that will be digitally empowered in the twenty-first century. Analysts predict that by 2023, consumers would spend over \$7.3 trillion on digital transactions, while companies will spend around \$34 trillion. If not sooner, it looks like most of the commerce shall be e-commerce by the next 30 years. When we talk about e-business and innovation, which is often measured by the B2C E-commerce Index and the Innovation Index, we immediately consider new products and/or services, as well as new combinations that lead to improved ones; new approaches to processing, manufacturing, and assembly; new markets to enter; new resource-use strategies; innovative business models; and so on. All of these are related to the efficacy and efficiency of techniques, procedures, methods, tools, and technologies used in the process of producing goods and services and delivering them from producers to final consumers through online e-commerce services.

Innovation and e-business may not necessarily necessitate innovations, but rather simple approaches to making decisions, individual and group activity-based ideas implementation, and so on.

Interest in innovation and e-business is rising, especially in relation to ISO standards and a culture of quality. Quality culture serves as a roadmap for ongoing improvement and unites internal customers and suppliers. It is the property of all members of an organization.

The fundamental idea of quality culture is embodied in ISO standards, which are becoming more and more well-liked around the world as a way to obtain a competitive advantage. The most important standards are those found in the ISO 9000, ISO 14000, ISO 20000, ISO 22301, ISO 27000, ISO 45000, and ISO 50000 families of standards. Of particular importance is the ISO 56000 family of standards, which was introduced in 2019 and is closely related to innovation management and creativity. This period also happens to coincide with the Covid-19 pandemic.

Innovation, e-business, quality, quality culture, quality culture management, and ISO standards are becoming critical components of business models achieving competitive advantage in the new normal and reality.

Objective of the research on relations between innovation and B2B E-Commerce, under a quality management approach was to establish, evaluate and confirm a methodology and methods to analyze relations between Innovation Index and B2B E-Commerce index, under a quality management perspective, while the aim of the research was to verify the existence of strong relations between innovation and B2B E-commerce, under a quality management approach, and we went through analyzing the literature already published on the issue, creating a model of the research employing correlation, regressive analysis and a descriptive analysis for Western Balkans as a study case, while considering results a discussion took place and conclusions and recommendations were drawn.

## LITERATURE REVIEW

Moreover, the literature review section should be written systematically. Also, the research gap should be a part of the literature review. The research gap should be discussed at the end of the LR section. The worldwide literature on innovation, e-business, quality, ISO standards, the culture of quality, etc. has improved, independent of the country and level of economic growth. This is due to the fact that, when appropriately implemented, ideas like innovation, quality, quality management, B2C E-commerce index, and ISO standards help both public and private organizations become more competitive in an open market when and where the offer is significantly greater than the demand—a scenario that has defined the world economy over the last 50 years.

### **Megatrends for 2020–2030 and how economies throughout the world react to crises and the post-crisis era.**

The following will be the primary megatrends for the next ten years: (1) population growth, which is central to the shift in economic power; (2) the pervasive impacts of global warming, which have a significant impact on crop yield and coastal areas; As a result of the rapid advancements in technology, artificial intelligence (AI), and machine learning, we are currently undergoing the fourth industrial revolution, also referred to as the "digital revolution." (4) Significant societal

transformation will be brought about by changes in the world's population, density, ethnicity, education level, and other factors that impact human population. These developments will present both opportunities and challenges for government and industry. These megatrends support structural changes, technological developments, shifting economic power, and other changes that have a substantial impact on national, international, and regional markets and society (Peter Fisk, 2019).

In reaction to these profound changes/megatrends, the crisis, and the post-crisis era, the globe is heading towards the following main trends: The revolution in information; (2) adaptable and learning organizations and innovation systems; (3) a profusion of abilities, knowledge, and competences; (4) better systems for production, distribution, and creation; (5) the application and growth of innovation systems, creativity, and quality management culture, etc., generally and regarding e-commerce.

### **Definition of Quality and quality culture**

The basic definition of quality, according to many writers, is a collection of accepted practices that form the guiding principles of organizations or working groups and direct the process of improvement in day-to-day operations involving labor and outputs. A "social attack that supports people in the organization to stay together" is, to paraphrase, a quality culture (Robbins, 1999).

The range of products and services that are offered, along with their characteristics and uses, has significantly expanded. These challenges are a reflection of this culture: (1) Self-improvement; (2) Respect and Tolerance; (3) Entrepreneurship; and (4) Capability (a demonstrated talent). "A group of common, respected, and integrally formed approaches of features of products and services, identified on the culture of organizations and systems of management" is the definition of a "culture of quality" (Vlăsceanu, Grünberg, & Pârlea, 2007, Ceko 2021).

"The importance of quality culture and quality management culture on conducting business and gaining a competitive advantage, and their connections to corporate social responsibility, sustainable business, business ethics, diversity issues, international, cross-cultural management, national/international organizational culture, culture and sectors of the economy in a country, as well as currently as an important part of the history of economic thought (related to business management cult)" Gordon and Owen (2008), Schein (2010) and (2013), Harvey and Stensaker (2008).

Several articles have covered ISO standards, including their importance and practical applications (Harrington & Mathers, 1997).

Currently, the most important ISO requirements are:

QMS – Quality Management System - ISO 9000 Family

Document management — Business process baselining and analysis ISO 10244:2010

Environment protection ISO 14000

IT – Information Technology - ISO 20000

BCMS – Business Continuity Management – Security & Resilience - ISO 22301:2019

ICM – Information Security Management - ISO 27000

HSW – Health And Safety At Work - ISO 45000

Energy Efficiency - ISO 50000

IMS – Innovation Management System 56002:2019

Etc.

The following three sorts of advantages of using standards are listed by ISO (ISO, 2014):

**Key benefit 1: Streamlining internal operations.**

One key conclusion is that standards may be utilized to speed up internal business operations, for instance by lowering the time required to complete certain tasks across a range of business functions, eliminating waste, lowering procurement prices, and boosting productivity (ISO, 2014). According to case studies, standards contribute between 0.15 and 5 percent of yearly sales revenues to the gross profit of businesses (ISO, 2014).

**Key benefit 2: Innovating and scaling up operations.**

A number of case studies illustrate how standards have been applied as the cornerstone of innovative business practices, allowing companies to expand their supplier base or launch and effectively oversee new product lines. In other instances, standards helped companies lower the risk involved in introducing new goods to local markets (ISO, 2014).

**Key benefit 3: Creating or entering new markets.**

ISO (2014) states that standards have been the cornerstone for the development of new products and their introduction into new markets, both domestically and internationally, as well as for the establishment of new markets. Under extraordinary conditions, the influence of standards goes well beyond the previously mentioned sum; companies have realised a gross profit contribution of up to 33 percent of their yearly sales, which allowed them to become leaders in their sector, at least temporarily (ISO, 2014).

**Innovation**

An OECD report (Nadim Ahmad and Richard G. Seymour 2006) from almost 30 years ago defined entrepreneurship as an inventive act that combines available resources and productive talent. (Drucker, 1985), and, with the use of skills for doing business (Shane 2003), including creativity, which begins and develops throughout this process (Sarasvathy 2001). According to a Manual published by the OECD (OECD 2005), creativity and innovation are related to the improvement of products/services, and the launch of new products/services on the market, this, is accompanied by innovative marketing activities, new ways of organization, etc. Schumpeter has long emphasized the role of innovation as a gear that constitutes industrial mutation in the reformation of the economy and its structure, eliminating the old and continuously bringing the newer (Schumpeter. 1942)". it is precisely this concept that takes on great importance, especially in the period of transnationalism, where the basis of the economy remains skills, knowledge, and competencies, i.e. non-material resources, which take more and more advantage compared to material resources. it is clear from the past innovation constitutes a clear incentive for businesses' success and the economy accordingly. this is because innovation directly affects the efficiency and effectiveness of entrepreneurship, its productivity, as well as the level of the national, regional, and global economy. As a practical implementation of new and rational ideas, which bring new and improved products and services (Schumpeter. 1993). new standards for innovation management, ISO 56000:2020 (ISO 2020), have now been presented, where innovation is defined as a concept through which value can be changed and spread. It is precisely the International Organization of Standards, which presents innovation as something new, a process, a procedure, or a product different from before, which is presented to users. This is also one of the reasons why ISO standards are applied to evaluate innovation within an organization and between them (ISO. 2019). The commonality of almost all definitions regarding innovation is that they present innovation as something new or as an improvement. According to some researchers, innovation is not invention, but it is still related to it since we are not always dealing with new products and services, but also with improvements in processes, procedures, ways of realizing products and services, etc. (Bhasin, Kim April 2, 2012), and all this to influence as much as possible one or several markets and the society of one or several countries or even globally (Morgan 2015), even without necessarily bringing inventions (Schumpeter 1939). In every country, there is a system of institutions, legislation, rules, processes, and procedures according to which it is the system itself that absorbs, builds, spreads, and uses the skills, knowledge, and competencies, which are the foundation of innovation. To have internal and regional and wider development, there is a tendency to always use more and more developing and new skills, knowledge, and competencies,

which are obtained during the development process of the country, the region, and the world, where innovation has a very big role. This is also the main reason why to innovate, a suitable climate is required for doing business and for research and development.

The suitable climate for doing business and for innovation, combined with having the skills, knowledge, and competencies, which require suitable conditions to be applied, make it possible for creativity and innovation to exist in developing countries, according to local requirements. This combined with the freedom of the market from the bureaucratic approach, the approach of the diversity of harmful regulations and procedures that hinder business and innovative ideas (WB Institute, 2005).

Ultimately, achieving and maintaining economic advantages requires a favorable environment for innovation and this can only be achieved with two-way support of the private and public sectors, and this is related to appropriate investments and the promotion of R&D activities, the existence of scientific research institutions, cooperation with academia, industries, aspects of intellectual property protection, etc. (Porter & Schwab, 2008).

New ways of communication, innovative business models and new technologies, etc., are what bring innovation (Chaffey, 2015).

#### Sources of innovation

While innovation can occasionally occur by accident, it is the breakdown of systems and the involvement of economic agents that bring about innovation. Innovation is brought about by a series of changes in the economy's structural makeup and expanding industries, as well as demographic shifts, market structure shifts, and shifts in how people view life and the future, including their spirituality (Drucker 2002).

Engineer in robotics Joseph F. Engelberger demonstrated that innovation simply needs three things:

- A known request for a need
- People to be suitable for the right technologies
- Financial incentive (Engelberger 1982).

The competition is accelerating more and more, and products, services, and production methods are becoming more and more global, as well as new technologies, and this makes businesses succeed only through the intensity through which effectiveness is achieved. and efficiency of innovations. This constitutes an important prerequisite for achieving and maintaining the economic advantages of business and the economy of a country. this is a process that is carried out through several interdependent actions carried out by different actors and that constitutes a very important factor in the success of these businesses and economies.

According to some authors, now the increasing results in production do not have the effect of fixed manufacturing elements such as labor, capital, and land, but are related to non-fixed factors that are innovation and changing technologies (Ceko, 2022, Anderson, Potočnik, Zhou, 2015).

Some other authors also focus on the relationships between doing business, leadership, strategic management, research and development, innovation, etc. (Shin, Zhang, Bartol (2015), Byron, Khazanchi (2015), Gilson, Lim, Litchfield, Gilson (2015), Perry-Smith, Mannucci, (2015).

As above, it seems that priority is given to the economic advantages that constitute an incentive for creativity and innovation, two elements that require dedicated support to achieve the desired result.

Now the crises are seen as an opportunity for creativity and innovation, and now activities such as health consultancy, online learning, e-commerce, etc., have best solved the problem of mobility. The sustainable future of systems is now considered inseparable from innovation, and this includes areas such as control and reduction of changes affecting climate aspects, green economy, circular economy, waste management, etc. (GII 2021).

The COVID-19 pandemic brought an unprecedented crisis to the global arena, and at the same time encouraged the explosion of innovative ideas in almost all areas of life, with the aim of economic growth and financial stability.

The crisis brought about by this pandemic was also accompanied by profound changes and impacts that need time to learn that they will be sustainable. The very fact that scientific research during the pandemic period in the field of health was immediately oriented toward the production of quality vaccines, shows that the awareness of the role of innovation, technologies, and scientific research performed its function, awareness that pushes you as such also in the field others.

Thus, innovation is today considered a tool for expanding, promoting, and ensuring the sustainability of trade and commerce in the global marketplace. The previous two decades have seen a significant transformation in the global commerce landscape, with an innovation economy focused on high-value goods and services gradually replacing economies of scale. (GII, 2021).

### **ISO 56000 – a new ISO standard family for Innovation**

The element that sets a business in motion and makes it successful is innovation. He is the fuel. The businesses that give this fuel to employees and managers are exactly the ones that have more profits and bring more benefits to society. Enterprises, regardless of their size and business model, through innovation improve their position in the market and achieve their business goals better and faster. It is these ventures that show even more agility in responding to challenges and unforeseen events (Ann Brady. 2021).

It is precisely the innovation management system that supports and encourages business organizations to grasp the best ideas and support continuous improvement to be as competitive as possible in a more global market and even more difficult to be successful. In these management systems, one of the latest families of standards published by the International Organization of Standards (ISO), precisely ISO 56000 - the family of ISO standards related to innovation (Clare Naden. 2020) is a part.

It is this standard, says Casanove, technical committee head at ISOI, in charge for this standard, that makes enterprises develop and evolve, create products and services, business models, etc., that add value, which is not without value in the monetary or financial aspect, but it can be of value to society, the environment, etc. Applying the standards that are part of this family (ISO 56000) makes it possible for organizations to significantly improve their survival in conditions of change and uncertainty, allowing these organizations to make inventions and reinventions in a sustainable way (Clare Naden. 2020).

The following standards are already published as part of the ISO 56000 family of standards known as the Innovation Management System (IMS):

Guidelines for innovation management - ISO 56000:2019

Guidelines for the Innovation Management System - ISO 56002

Guidelines for Innovation management - Innovation partnership tools and techniques - ISO 56003

Guidelines for ISO/TR 56004 - Innovation Management Assessment

Guidelines for Innovation management - Intellectual property management tools and techniques - ISO 56005

Guidelines for Innovation Management and Strategic Intelligence Management - ISO 56006

Innovation management - Ideas management - ISO 56007

Guidelines for Innovation management - ISO 56008 (Instruments and techniques for gauging innovation performance) (ISO. 2019).

The International Organization for Standards highlights that, in accordance with this standard as well as others, innovation and creativity are seen as having a strong and inseparable relationship. It also stresses the use of ISO standards generally and the use and application of the ISO 56000 family of standards in particular, make companies improve their commitment concerning to customers, continuously improving processes, procedures, regulations, data retention and their business activities, in search of economic advantage, maintaining this advantage and in search of other



advantages, which makes these enterprises respond even better and more successfully to crises and disasters.

Changes in value over time (employee value, shareholder value, proportion, and value of sales from new items) may be used to gauge innovation. Management teams will create goals, precise metrics, goals, and activities to attain these goals for each of these four areas (Chaffey, 2015)

### **1.5 Innovation Index**

Every year, the World Intellectual Property Organization releases the Global Innovation Index, which assigns a ranking to countries according to their success and inclination for innovation. World Business, a British business publication, and INSEAD founded it in 2007 (Aubert, 2010). It was made available until 2021 by the World Intellectual Property Organization in association with INSEAD, Cornell University, and other organizations. (Brueggemann & Matthews, 2015).

It is founded on subjective and factual data gathered from various and factual data gathered from a variety of sources, such as the World Bank, the International Telecommunication Union, and the World Economic Forum.

Since the GII's launch in 2007, an increasing number of countries have developed policy solutions to enhance their performance by methodically analyzing their yearly GII findings. The United Nations General Assembly (UN, 2019), on December 19, 2019, passed a resolution referencing the UN 2019 index on science, technology, and innovation for sustainable development. Global Innovation Index (GII)

In the backdrop of the ongoing COVID-19 pandemic, slow productivity growth, and other evolving concerns, the Global Innovation Index (GII) tracks the most recent developments in global innovation. It lists the countries with the most innovative economies and describes the advantages and disadvantages of innovation across 132 economies. To present the most complete picture of innovation, the Index is composed of over 80 criteria, including evaluations of the infrastructure, political environment, educational system, and knowledge generation of each economy. Tracking progress and comparing it other economies in the same area or income bracket is made easier by the GII's numerous measures (GII, 2021).

### **Internet, E-Commerce, and Innovation**

We have entered a new economic age as a result of the creation of communication infrastructure in the shape of the Internet in the late 1980s and early 1990s, as well as associated advancements in information, publication, and distribution technologies (together referred to as Web technologies). The digital economy is another name for this new economy, which is fueled by the Internet and web technologies (Bhasker, 2013). Innovative businesses like Dell Computers, Amazon.com, Intel, Cisco, and Yahoo! saw the potential and were among the first to leverage the internet and online as a tool for Integrated Information Management. By integrating various online information management technologies over the Internet, these businesses established systems for taking orders from customers, processing payments, offering customer support, obtaining marketing data, and receiving online reviews. These operations are collectively referred to as online commerce, or e-commerce. These businesses have improved their profitability, net worth, and competitive dynamics by using e-commerce methods. With its expansion, e-commerce has already become a technical advancement. Innovation is unrelenting, with new technologies, business models, and communication techniques appearing on a regular basis. All firms need to assess the possibilities of new electronic and Internet-based communication technologies to boost corporate competitiveness given the ongoing dangers related to security and performance. For example, many businesses are assessing the benefits, drawbacks, and risks associated with the digital business technology they now use as part of endeavors to transform their operations digitally. Take into account the lessons learned from the dot-com collapses as well as the fact that innovation and the growth of Internet pure-plays persisted past 2000 and that a number of online companies have prospered ever since, such as social networks and digital publishers (Chaffey, 2015).

## **Internet and innovation**

The current Internet truly started almost 69 years ago, and while it expanded slowly for the first few decades before quickening with the rise of the Web and mobile platforms, this was not the case for the phrase "Internet" time, which journalists casually used to represent a mechanism for rapid, practically instantaneous worldwide change.

Three stages can be distinguished in the development of the Internet.

The Innovation Phase, which ran from 1961 to 1974, is when the fundamental elements of the Internet were conceived. These elements include packet-switching hardware, the TCP/IP communications protocol, and client/server computing (all of which are discussed in more detail later in this section).

Linking massive mainframe computers on various college campuses was the initial goal of the Internet. Until recently, the main means of direct connectivity between campuses were the telephone network and private networks run by major computer manufacturers.

Large organizations like the National Science Foundation (NSF) and the U.S. Department of Defense (DoD) provided financing and legitimacy for the developing Internet during the Institutionalization Phase, which lasted from 1975 to 1995.

The Internet's foundational ideas were proven in multiple government-funded demonstration projects before the Department of Defense (DoD) contributed \$1 million to advance their development into a dependable military communications system. The Advanced Research Projects Agency Network, or ARPANET, was created as a result of this endeavor. In 1986, the NSF took over construction of the civilian Internet (then called NSFNET) and launched a \$200 million expansion program.

During the Commercialization Phase, which spanned from 1995 to the present, the U.S. government pushed private companies to take over and expand local service beyond military installations and college campuses to the rest of the world's population. Productivity gains in the digital business are only achieved when combined with investments in process redesign, organizational change management, and innovation. (Chaffey, 2015)

## **E-Commerce and innovation**

The act of conducting business using the Internet, the World Wide Web (Web), mobile browsers, and applications is known as e-commerce. Despite their sometimes synonymy, the terms "Internet" and "Web" actually relate to two quite different ideas. One of the most well-known services on the Internet is the Web, which provides access to billions of web pages. A worldwide network of computer networks is the Internet. An app is the abbreviation for an application, which is software. The term is mostly used to refer to mobile applications, while it is also infrequently used to refer to desktop computer programs. One kind of web browser program that is used to access the internet from a mobile device is called a mobile browser.

Technically speaking, electronic commerce, or e-commerce, is the digitally mediated exchange of products and services between companies and individuals. Each of these components is important and makes up our working definition of e-commerce. Digitally enabled transactions are any that make use of digital technology as a medium. The majority of transactions that fall under this category happen via mobile devices, the Web, or the Internet.

Commercial transactions involve the transfer of value, such as money, across organizational or human borders in exchange for goods and services. Understanding the value exchange is necessary in order to understand the limits of e-commerce. If there is no exchange of value, there can be no commerce. The convergence of devices and communication technologies has led to an incredible increase in the number of people who have access to the Internet.

Because internal and external procedures are more effective as a result of the switch from traditional to electronic commerce, practically every firm may benefit from these improvements.

While some additional models have evolved as a result of the development of the Internet, many electronic commerce enterprises are founded on models that have been imported from conventional commerce. For electronic commerce to grow, the supporting technologies must converge as well as for business processes that support the transactional environment to change and for public policy concerns to be resolved. Once online enterprises have been established, the electronic market needs infrastructure resembling traditional commerce to deal with the issue of discovering, identifying, and luring clients to these businesses. Better, more effective, and more appealing shopping experiences are essential to the expansion and success of internet commerce. When a consumer is attempting to find and identify the greatest offer in the broad Internet business environment, reference-based, search-based, and directory-lookup-based techniques only provide a restricted answer. Today, we are seeing the emergence of agent-mediated electronic commerce approaches that may automate the process of searching through the massive amount of information and bargains on the Internet while also enhancing the shopping experience. (Bhasker. 2013), keeping in mind that e-commerce has had three stages—innovation, consolidation, and reinvention—since its inception, including a period of explosive expansion and tremendous innovation.

- Early e-commerce witnessed a mixed record of technological and commercial success, with high client usage and revenue growth but low profit margins. This period saw the construction of a robust digital infrastructure that allowed for the substantial expansion of e-commerce in the ensuing ten years.
- In 2001, e-commerce began a phase of consolidation that lasted until 2006.
- In 2007, e-commerce experienced a period of reinvention and attracted large audiences with the emergence of mobile digital platforms, social networks, and Web 2.0 apps (Laudon and Traver, 2021).

The remarkable expansion of electronic commerce can be ascribed to the lowering of network-based business transaction friction. This decrease has improved customer service, reduced prices to consumers, and sped up transaction execution, allowing immediate delivery of items in some circumstances (software, digital music). Electronic commerce is concerned with technology and business processes that enable the transfer of information through international networks and interaction between producers, customers, middlemen, and sellers, which must be successful and efficient.

Because there are so many distinct technological trajectories being pushed by conflicting discoveries, it has become challenging to stay up with technological advancement in the modern economy. The absence of any standards makes the work even more difficult, even though it is perfect in the early phases of new technologies.

Competitive forces emerge from non-traditional sources for established businesses with typical business practices. As more people had access to the Internet, new markets arose and old businesses were compelled to use electronic commerce to survive and expand. The 1980s personal computer revolution has now reached a point beyond which it can no longer be reversed, and Internet connection and digital transformation have propelled the economy into the age of electronic business and trade. A new force resulting from the innovation occurring in wireless technologies has already started to drive enterprises farther up the ladder of evolution as the present advancements in digital transformation that are driving the electronic commerce age are being solidified (Bhasker. 2013).

The new catchphrase is mobility, and advancements in wireless technology are what's making it happen. Customers are no longer compelled to reach for their computers, as is the case with internet commerce. They may access information, pay bills, make reservations, play games, download music, and movies, chat with friends and family, and conduct transactions all on the little screens of their mobile devices (Bhasker. 2013)

Of course, a successful company plan does not ensure success. The start-up will fail if there are issues with certain components of the idea's execution (Chaffey, 2015). The following execution-related elements can be considered as having failed for certain businesses:

Promotion - Online or offline marketing strategies are insufficient to get enough site visitors.

Performance, availability, and security - Some websites have suffered from their success and are unable to provide quick access to the websites, or technological issues have led to the unavailability or insecurity of the service. Due to delays in building the website and its accompanying infrastructure, several sites have remained inaccessible despite extensive advertising campaigns (Chaffey, 2015).

Fulfillment - The site may be efficient in and of itself, but if things are not shipped accurately or on time, customer service and, in turn, business image, will suffer (Chaffey, 2015)

The ability to determine which new technology developments may be implemented to create a competitive advantage—what is "the next big thing"—is one of the major issues of managing e-commerce. The fact is that no one can foretell the future, and many businesses have misread the product market (Chaffey, 2015)

Trott (1998) lists some prerequisites that must be met by an organization to enable it to successfully adapt to technological change or innovation:

Growth orientation is a long-term perspective as opposed to a short-term one.

Vigilance is the capacity to monitor the environment.

Technology commitment is the readiness to invest in it. Accepting risk is being willed to accept calculated chances.

Cross-functional cooperation is the capacity for cross-functional cooperation.

Receptivity is the capacity to react to technological advancements made by outside parties.

Allowing time to research new technical prospects is slack.

Adaptability is the capacity to adapt to change.

Wide variety of abilities, including technological and business expertise.

Being an early adopter (as an organization) has its drawbacks because of the possibility of failure; the leading edge is sometimes referred to as the "bleeding edge." Bugs will be present in new technology, they might not integrate well with the current systems, or the marketing advantages might not materialize as promised. Naturally, taking risks is motivated by the potential for great benefits; for example, if you employ a strategy that your competitors do not, you will have an advantage over them (Chaffey, 2015).

Modern society rarely views the significant breakthroughs of the 20th century in retail and trade, such as supermarkets, self-service, bar codes, and reward systems, as such. Over several decades, change happened gradually; however, since the public internet was established in the 1990s, change has accelerated at an astounding rate. Only 25 years have passed since e-commerce took on its current form, yet in that time it has seen numerous significant revolutions. Not only did innovation create it, but it also keeps it going.

An e-commerce company cannot afford to remain stagnant as innovation transforms the commercial and technological landscapes. Business must take advantage of these significant benefits.

Although it frequently is, being innovative doesn't require you to be the trailblazer. It's also not always about the relationship with the customer. In terms of marketing, supply chains, inventory, customer engagement, transaction management, and after-sales service, it simply means realizing the countless potential it presents.

Accepting innovation entails being prepared to spot ineffective procedures and either update or replace them, as well as explore new goods, services, and methods that will bolster your company's reputation, save costs, and increase profitability.

Innovation varies depending on the type of business. Nowadays, e-commerce encompasses such a wide range of product categories and niche markets that an effective strategy for a software as a

service (SaaS) subscription provider would not be the same as one that works for a fashion shop. Every company needs to create a unique innovation road plan based on its size, goals, resources, and target market. When you believe your company has reached digital maturity, it's time to find the next move rather than put the brakes on.

The quality of the customer experience is the most crucial differentiator in the digital landscape for both B2B and B2C verticals, even though many of the innovations you deploy will have a direct influence on your internal procedures. Your goal should be to provide a flawless client experience, eliminating any potential areas of friction, fostering brand preference and trust, and promoting repeat business.

Organizations should take immediate action to improve your e-commerce platform for mobile devices if it hasn't already. Websites, which were formerly the main instrument for e-commerce, are now only used in second place, with about 73% of transactions taking place on mobile devices.

The 62% of consumers who claim that a bad mobile experience permanently deters them is an even more noteworthy statistic. Innovations like connecting with messaging apps and digital wallets, streamlining transaction times, and improving the readability and accessibility of content should all be taken into consideration.

Even though online buying is quick and easy, returning unwanted or inappropriate items has always been a big concern. Around 84% of consumers will not purchase from retailers with poor return policies, according to research. Given how easy it is to give pre-printed labels and QR codes, there is no need for this anymore. Additionally, there are numerous choices for return drop-off locations, as well as pickup services offered by a number of the major couriers.

Even something as basic as the organizations website's performance can have a big impact. For better or worse, internet users have shorter attention spans than ever before, and they get impatient with pages that take a long time to load or are difficult to browse. Anything that might obstruct a customer's path around the exhibits would not be permitted in a real store, and an online retailer should act similarly.

The moment of buying is maybe the most significant of all. Users are naturally aware of security risks, therefore any errors, even small ones, such as error warnings or improperly loading payment pages, will raise suspicions about the reliability of the website.

Engaging an e-commerce as a service (EaaS) provider is the easiest and most economical approach to adopt new innovations, unless you have a dedicated team to handle difficulties like these. An EaaS partner will have the know-how to give access to all the advantages of continuous innovation, regardless of the e-commerce platform or software you choose (Jon Naughton, 2023)

The quickest route to strengthening an online store's interaction with customers is to develop an e-commerce strategy. Executive decision-making is made simpler and marketing investments are approached methodically and systematically. Most significantly, this is how the staff of a store can maintain focus on the long-term objectives while still accomplishing daily targets.

Implementing innovation in retail takes a professional team of software developers, marketing experts, and business analysts. Companies create data-based growth strategies for e-commerce stores and assist in bringing these objectives to life with creative innovations ([Soloway Technologies](#), 2019).

In a paper analyzing how innovation affects the relationship between the digitalization of the company and its economic and financial performance, authors have reviewed the cause-effect situation of this relationship (Fernández-Portillo, Almodóvar-González, Sánchez-Escobedo, Coca-Pérez, 2022). According to certain research literature, the effect of ICT technology on business performance varies throughout businesses. There is probably a creative solution for this issue. In a study investigating the role of innovation in the relationship between business performance and corporate digitalization in order to further explore this claim, authors found that innovation functions as a moderator for business digitalization (Fernández-Portillo, Almodóvar-González, Sánchez-Escobedo, Coca-Pérez, 2022). Rogers' Innovation Theory serves as the cornerstone of this research methodology. Businesses from all throughout Spain were surveyed, and Partial Least Squares-Structural Equation modelling (PLS-SEM) and Moderation Analysis were used

to compare the results. The results suggest that innovation plays a moderating role in the correlation between corporate digitalization and performance.

These results allow us to conclude that, in addition to the fact that the company's digital transformation is essential for improving performance, this digitalization must be synchronized with a unique innovation strategy that also helps the company's performance to improve. The aim of this study is to provide light on the relationship that exists between an organization's financial and economic performance and its digitization, as well as the part that innovation plays in this relationship (Fernández-Portillo, Almodóvar-González, Sánchez-Escobedo, Coca-Pérez. 2022)

According to a research on innovation and e-commerce models, as essential in sustainable development globally, authors found e-commerce models are among the most important technology and innovation catalysts of Dubai's pillars (Faccia, Le Roux, Pandey, 2023). Technologies play a crucial role in the strategic plan that seeks to digitalize the city and make it entirely paperless. Examining the most pertinent research on e-commerce models and sustainable e-commerce comes first in the analyses. Additionally, the study pinpoints the innovative and sustainable paradigms that are most suited for the effective development of technology and e-commerce. The best, most creative, and sustainable e-commerce strategies used by the businesses are finally the main focus, with the Emirate of Dubai serving as a pertinent case study. The main finding of this study illustrated how the government's provision of chances and sufficient investments fostered a thriving environment that facilitated the growth of e-commerce and the acceptance of new technologies. Afterwards, sustainable strategies are paired with those models. A framework for research on organic growth is used to conduct the analysis. As a result, the findings offer several stakeholders insightful information. In fact, the Emirates of Dubai can be seen as a model for a strategic digitalization strategy despite certain drawbacks, as its ecosystem is especially beneficial for the expansion of e-commerce and business sales (Faccia, Le Roux, Pandey, 2023)

### **B2C E-commerce index**

An economy's readiness to accommodate online shopping is gauged by the UNCTAD B2C E-commerce Index. Four variables with a strong connection to online purchasing make up the index. Eight of the top 10 economies, much like the 2019 ranking, are located in Europe. With only 4.1 points separating first and tenth place, index values are quite close. As the top-ranked nation on the survey, Switzerland has just barely surpassed the Netherlands. The top ten's makeup only changed a little, with Australia being replaced by China, Hong Kong, and SAR. Despite being the largest B2C marketplaces in the world, China and the US are ranked 12th and 55th on the index, respectively. They are not placed higher in part because the index does not take into account their scale. Even while the two nations are ahead in several absolute comparisons, they fall behind. For instance, China ranks 87th in the world for Internet penetration, whereas the United States has lower Internet penetration than any of the top 10 economies. The United States is ranked 12th in terms of shopping penetration, whereas China is ranked 33<sup>rd</sup> (UNCTAD B2C Index. 2020).

#### **The top spots among developing economies are dominated by Asian countries.**

With incomes in the upper medium or high range, the top ten rising economies in the 2020 index are all from Asia (Table 2). With Oman at the bottom and Singapore at the top, separated by a 24-point gap, the range of index values is greater than that of the top ten nations in the world.

There was only one difference in this group's makeup from the 2019 index: Oman took Turkey's place when it left. Malaysia saw the greatest index value improvement.

Some emerging nations had the biggest gains in index scores. Algeria, Ghana, Brazil, and Lao PDR were the top four, and each of their ratings increased by at least five points as a result of considerable increases in postal reliability (UNCTAD B2C Index. 2020).

#### **The least developed nations are lagging behind in terms of preparedness for e-commerce.**

The countries at the opposite end of the ranking are the least equipped to engage in and benefit from e-commerce. The 20 economies with the lowest 2020 index scores, including 18 LDCs, are made up of only two non-LDC economies: the Congo and the Syrian Arab Republic.

In view of this, UNCTAD has carried out 25 Rapid e-Trade Readiness Assessments of LDCs during the past few years.<sup>15</sup> These assessments seek to provide an understanding of the problems that must be handled in a variety of policy domains in order to enhance a nation's capacity for effective e-commerce engagement. Donors have observed a relatively low demand for development aid in the domain of e-commerce, which can help overcome a substantial market failure, because most LDCs lack the information and awareness required to describe their demands. There are notable regional differences. In contrast to three-quarters of individuals in Western Asia, less than one-third of people in Africa have access to the Internet. There are frequently differences in the relative benefits and drawbacks. The only indicator that is below the worldwide average is internet use; the levels of the other four indicators are frequently comparable throughout East, South, and Southeast Asia. Postal reliability is the most important area that needs growth in Latin America and the Caribbean. Gaining ground in all policy areas would benefit African countries and allow more inclusive e-commerce. The index value from the 2019 index has not changed overall. According to the UNCTAD B2C Index for 2020, the only region where the value increased was Latin America and the Caribbean.

### **Research Gap and contribution**

Although for the above literature review it is clear that innovation index, B2C e-commerce index and the ISO standards have been investigated as standalone entities, there is no research investigation in depth about their interdependencies. This is of course true with regards to Western Balkans too, where there is lack of in depth studies regarding ISO standards and economic growth. As a contribution of the present study we could define that, this research explores consequences of creating a potent tool that blends innovation, B2C e-commerce, and quality control, obtaining competitive edge, while addressing acknowledged requirement to examine the substantial connections between innovation, B2C E-commerce, ISO 56000 family of standards, and descriptive data for a region (the Western Balkans), utilizing correlation and regression analysis, is its practical implications.

### **DATA AND METHODOLOGY**

The study's foundation was the level of innovation, the B2C E-commerce index, and their interactions within a global ecosystem of entrepreneurship.

Since there is no empirical evidence to support the relationship between innovation and the B2C E-commerce index, this study takes a theory-building method in an attempt to address the following research questions:

- RQ1: Does the B2C E-commerce index have any relationship to innovation?
- Two possibilities have been developed in light of this:
- Ho: There is no relationship between the B2C E-commerce index and innovation.
- H1: The innovation index and the B2C e-commerce index are related.

Though theoretical approaches to the relationships between innovation and the B2C E-commerce index exist, there are no arguments based on data, statistics, or math studies. Considering that there are a few different types of research on the relationships between innovation and the B2C E-commerce index, which are listed in the literature review of this paper research.

Moreover, the literature review section should be written systematically. Also, the research gap should be a part of the literature review. The research gap should be discussed at the end of the LR section.

Although prior empirical research has acknowledged the importance of innovation, the B2C E-commerce index, and quality management in the business and entrepreneurship ecosystem, it has not clarified how these factors affect and are connected to quality management. Furthermore, there have been very few rigorous theoretical research that show the robust correlation between innovation and the B2C E-commerce index; no algebraic, statistical, or numerical studies have been done in this field. It is therefore necessary to construct a hypothesis that is supported by evidence and study. It is appropriate to combine an exploratory strategy with a single complete case study

technique in order to gain a deeper understanding of phenomena and provide a more in-depth analysis of theoretical frameworks.

Taking into consideration innovation as a feature of the ISO 56000 family of standards, the example was selected based on three main considerations: a theoretical approach, application of relationships, and practical benefits of relationships between innovation and the B2C E-commerce index. The example project was divided into three stages: identifying the requirements for quality control, figuring out how innovative each country is, and identifying the requirements for the B2C E-commerce index.

**Data collection**

The World Intellectual Property Organization's Global Innovation Index Report 2021, 14th Edition, served as the source for the innovation data. Every year, nations are ranked according to their propensity for and success with innovation in the Global Innovation Index (GII).

Information for the B2C E-commerce index was also taken from the 14th edition of the World Intellectual Property Organization's Global Innovation Index Report 2021.

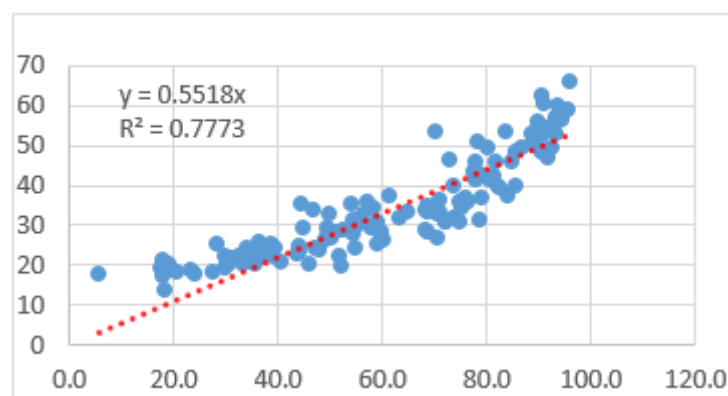
**FINDINGS**

The Global Innovation Index Report 2021 (World Intellectual Property Organization, 14th Edition) was used to compile statistics on innovation throughout the world.

The Global Innovation Index Report 2021 (World Intellectual Property Organization, 14th Edition) was used to compile statistics on B2C e-commerce globally.

For 128 countries globally, descriptive statistics for the Innovation Index and Creativity output were conducted, as well as a correlation and regression analysis (inferential statistics) between the Innovation Index and the B2C E-commerce Index.

**Graphic 1. B2C E-commerce Index and Innovation Index Correlation (Drawn by Authors Using GII 2020 and UNDP B2C Data), with Innovation Index at X Axis and B2C Index at Y-Axis**



SUMMARY OUTPUT	
<i>Regression Statistics</i>	
Multiple R	0.986963
R Square	0.974096
Adjusted R Square	0.966222
Standard Error	5.791549
Observations	128

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	160186.3	160186.3	4775.687	4.9E-102
Residual	127	4259.839	33.54204		
Total	128	164446.1			



	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
95.9	0.549425	0.00795	69.10635	1.3E-102	0.533693	0.565158	0.533693	0.565158

$Y = ax + b$

$y = 0.5518x$

$R^2 = 0.9737$

$r = 0.986963$

These findings demonstrate an association between innovation and the B2C E-commerce index. (Hypothesis 1).

**Table 1: Descriptive Statistics**

Rank innovation	for Economy	Innovation index
	Maximum	66.1
49	Montenegro	35.4
53	Serbia	34.3
	Mean	33.97364
57	N.R Macedonia	33.4
72	Bosnia & Herzgovina	29.0
82	Albania	27.1
	Minimum	13.6

**Table 2: B2C Index**

Rank for B2C	Economy	B2C index
	Maximum	95.9
43	Serbia	75.3
52	N.R Macedonia	71.1
	Mean	60.38295
70	Bosn&Herzg	58.1
78	Montenegro	54.0
85	Albania	49.5
	Minimum	5.6

<b>Innovation index</b>	
Mean	33.97364
Standard Error	1.098428
Median	31.2
Mode	30.8
Standard Deviation	12.47574
Sample Variance	155.6441
Kurtosis	-0.59075
Skewness	0.649514
Range	52.5
Minimum	13.6
Maximum	66.1
Sum	4382.6
Count	129
Largest(1)	66.1
Smallest(1)	13.6
Confidence Level (95.0%)	2.173427

<b>B2C e-Commerce index</b>	
Mean	60.38295
Standard Error	2.051592
Median	60
Mode	93.4
Standard Deviation	23.30161
Sample Variance	542.965
Kurtosis	-1.02106
Skewness	-0.25323
Range	90.3
Minimum	5.6
Maximum	95.9
Sum	7789.4
Count	129
Largest(1)	95.9
Smallest(1)	5.6
Confidence Level (95.0%)	4.059426

## RESULTS

There is an association between innovation and the B2C E-commerce index. (Hypothesis 1 verified). About the innovation index, in a total of 128 economies, values of the innovation index vary between a maximum of 66.1 and a minimum of 13.6, Western Balkan countries are around the middle of the list, far away from the EU countries, most of which are on top of the list for this index, with Montenegro and Serbia above the mean 33.97364, with the respective values of 35.4 and 34.3.1, while NR Macedonia, Bosnia & Herzegovina, and Albania are below the mean 33.97364, with the respective values of 33.4, 29.0, and 27.1. About the B2C E-commerce index, in a total of 128 economies, values of the B2C E-commerce index vary between a maximum of 95.5 and a minimum of 5.6, Western Balkan countries are around the middle of the list, far away from the EU countries, most which are on top of the list for this index, with Serbia and NR Macedonia above the mean 60.38295, with respective values of 75.3 and 71.1, while Bosnia & Herzegovina, Montenegro, and Albania are below the mean 60.38295, with the respective values of 58.1, 54.0, and 49.5.

## DISCUSSION

Regarding the theory, based on the study's final findings, a new avenue for investigation into the relationship between innovation and the B2C E-commerce index has been opened, to use it to help businesses and nations' economies gain a competitive edge. The linear model that has been herein developed is fitting very well the available data with very good statistical significance within an appropriate confidence level.

This study was conducted utilizing a wealth of information on the Innovation Index and B2C E-commerce Index for the year 2021. Although more investigation is needed to explore the relevant time series analysis and predictions of the models in the future, it is not anticipated that the models will be nonlinear. The authors are under research for prediction analytics of the relevant time series data in order to establish a comprehensive study of the parameters of the proposed model through time.

## CONCLUSION AND RECOMMENDATIONS

Innovation and creativity are crucial in overcoming resource limitations due to the fixed nature of natural resources and limitations on unrestricted economic expansion. Innovations have a propensity to save finite resources. Fixed factors may not be a significant impediment to growth if technological advancement will be fixed-factor saving. Since both the B2C E-commerce index and quality management are not fixed resources and have a close relationship with innovation, the same justification and logic may be used to support both. Improving innovation, B2C E-commerce index, quality management, and business climate in SMEs are necessary to achieve competitive advantage. From a general microeconomic perspective, this study broadens our understanding of the relationships between innovation, the B2C E-commerce index, and quality management, which will be useful for future managerial decisions, with a possibility, future studies may concentrate on

creating and validating the suggested framework and exploring the problem in other contexts and situations. A regressive study confirmed the theoretical findings that a high correlation exists a high correlation between the Innovation index and the B2C E-commerce index. The main advice is that, as a response to the crisis and post-crisis period, applying ISO standards generally and the ISO 56000 family of standards will help businesses strengthen their commitment to their customers while also enhancing innovation and B2C E-commerce index activities, processes, and procedures, and economies worldwide to achieve a competitive advantage.

Regarding the theory, based on the study's final findings, a new avenue for investigation into the relationship between innovation and the B2C E-commerce index has been opened, to use it to help businesses and nations' economies gain a competitive edge. This study was conducted utilizing a wealth of information on the Innovation Index and B2C E-commerce Index. If these relations hold for other times, more investigation is required to confirm this.

### CONFLICT OF INTEREST

The author has no conflicts of interest to declare that are relevant to the content of this article.

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## APPENDIXES

Table 1. Innovation index and B2C E-commerce index

Rank for B2C from top to bottom	Rank for the innovation about rank for B2C	Economy	B2C index	Innovation index	Rank for innovation from the top to bottom	Economy	Innovation index
1	1	Switzerland	95.9	66.1	1	Switzerland	66.1
2	5	Netherlands	95.8	58.8	2	Sweden	62.5
3	6	Denmark	94.5	57.5	3	USA	60.6
4	8	Singapore	94.4	56.6	4	UK	59.8
5	4	UK	93.6	59.8	5	Netherlands	58.8
6	9	Germany	93.4	56.5	6	Denmark	57.5
7	7	Finland	93.4	57.0	7	Finland	57.0
8	15	Ireland	93.4	53.0	8	Singapore	56.6
9	20	Norway	92.6	49.3	9	Germany	56.5
10	11	Hong Kong	91.8	54.2	10	Korea	56.1
11	26	New Zealand	91.8	47.0	11	Hong Kong	54.2
12	3	USA	91.0	60.6	12	France	53.7
13	17	Canada	90.8	52.3	13	Israel	53.5
14	24	Estonia	90.8	48.3	14	China	53.3
15	2	Sweden	90.8	62.5	15	Ireland	53.0
16	23	Australia	90.6	48.4	16	Japan	52.7
17	12	France	90.0	53.7	17	Canada	52.3
18	10	Korea	89.8	56.1	18	Luxembourg	50.8
19	19	Austria	88.8	50.1	19	Austria	50.1
20	16	Japan	88.7	52.7	20	Norway	49.3
21	22	Belgium	86.8	49.1	21	Iceland	49.2
22	25	Czechia	85.8	48.3	22	Belgium	49.1
23	38	Slovakia	85.7	39.7	23	Australia	48.4
24	30	Spain	84.9	45.6	24	Estonia	48.3
25	41	Croatia	84.0	37.3	25	Czechia	48.3
26	13	Israel	83.9	53.5	26	New Zealand	47.0
27	39	Lithuania	82.6	39.2	27	Malta	46.4
28	37	Poland	82.2	40.0	28	Italy	45.7
29	28	Italy	81.8	45.7	29	Cyprus	45.7
30	33	Malaysia	81.3	42.4	30	Spain	45.6
31	35	Hungary	80.5	41.5	31	Portugal	43.5
32	21	Iceland	80.3	49.2	32	Slovenia	42.9
33	43	Greece	79.2	36.8	33	Malaysia	42.4
34	32	Slovenia	78.8	42.9	34	UAE	41.8
35	64	Belarus	78.8	31.3	35	Hungary	41.5
36	18	Luxembourg	78.4	50.8	36	Latvia	41.1
37	34	UAE	78.2	41.8	37	Poland	40.0
38	29	Cyprus	78.1	45.7	38	Bulgaria	40.0
39	36	Latvia	77.8	41.1	39	Slovakia	39.7
40	31	Portugal	77.5	43.5	40	Lithuania	39.2
41	47	Russian Fed	76.6	35.6	41	Croatia	37.3
42	44	Thailand	76.0	36.7	42	Viet Nam	37.1
43	53	Serbia	75.3	34.3	43	Greece	36.8

44	66	Iran	75.0	30.9	44	Thailand	36.7
45	46	Romania	75.0	36.0	45	Ukraine	36.3
46	38	Bulgaria	73.9	40.0	46	Romania	36.0
47	63	Georgia	73.6	31.8	47	Russian Fed	35.6
48	27	Malta	72.9	46.4	48	India	35.6
49	67	Saudi Arabia	72.3	30.9	49	Montenegro	35.4
50	68	Qatar	72.1	30.8	50	Philippines	35.2
51	45	Ukraine	71.2	36.3	51	Turkey	34.9
52	57	N.R Macedonia	71.1	33.4	52	Mauritius	34.4
53	59	Moldova	70.8	33.0	53	Serbia	34.3
54	83	Oman	70.6	26.5	54	Chile	<b>33.9(mean )</b>
55	14	China	70.1	53.3	55	Mexico	33.6
56	56	Costa Rica	68.8	33.5	56	Costa Rica	33.5
57	51	Turkey	68.8	34.9	57	N.R Macedonia	33.4
58	77	Kuwait	68.7	28.4	58	Mongolia	33.4
59	54	Chile	68.4	33.9	59	Moldova	33.0
60	76	Kazakhstan	68.2	28.6	60	South Africa	32.7
61	58	Mongolia	65.0	33.4	61	Armenia	32.6
62	62	Brazil	63.5	31.9	62	Brazil	31.9
63	42	Viet Nam	61.6	37.1	63	Georgia	31.8
64	86	Lebanon	<b>60.4(m ean)</b>	26.0	64	Belarus	31.3
65	81	Azerbaijan	60.0	27.2	65	Tunisia	31.2
66	78	Bahrain	59.7	28.4	66	Iran	30.9
67	89	Dominican Rep	59.3	25.1	67	Saudi Arabia	30.9
68	69	Colombia	59.1	30.8	68	Qatar	30.8
69	52	Mauritius	58.4	34.4	69	Colombia	30.8
70	72	Bosn&Herz g	58.1	29.0	70	Uruguay	30.8
71	48	India	57.1	35.6	71	Jamaica	29.1
72	70	Uruguay	56.6	30.8	72	Bosn&Herz g	29.0
73	60	South Africa	56.5	32.7	73	Panama	29.0
74	71	Jamaica	55.0	29.1	74	Morocco	29.0
75	96	Trnd & Tbg	54.9	24.1	75	Peru	28.8
76	80	Jordan	54.7	27.8	76	Kazakhstan	28.6
77	65	Tunisia	54.6	31.2	77	Kuwait	28.4
78	49	Montenegro	54.0	35.4	78	Bahrain	28.4
79	75	Peru	52.5	28.8	79	Argentina	28.3
80	119	Algeria	52.2	19.5	80	Jordan	27.8
81	105	Ghana	51.9	22.3	81	Azerbaijan	27.2
82	79	Argentina	50.9	28.3	82	Albania	27.1
83	84	Indonesia	50.1	26.5	83	Oman	26.5
84	61	Armenia	49.9	32.6	84	Indonesia	26.5
85	82	Albania	49.5	27.1	85	Kenya	26.1
86	73	Panama	49.5	29.0	86	Lebanon	26.0
87	85	Kenya	49.0	26.1	87	Tanzania	25.6
88	99	Sri Lanka	47.8	23.8	88	Botswana	25.4
89	97	Paraguay	47.1	24.1	89	Dominican Rep	25.1
90	55	Mexico	46.8	33.6	90	Rwanda	25.1

91	115	Nigeria	46.2	20.1	91	El Salvador	24.8
92	74	Morocco	44.8	29.0	92	Kyrgyzstan	24.5
93	50	Philippines	44.7	35.2	93	Uzbekistan	24.5
94	92	Kyrgyzstan	44.3	24.5	94	Nepal	24.4
95	101	Honduras	44.2	23.0	95	Egypt	24.2
96	100	Senegal	44.1	23.7	96	Trnd & Tbg	24.1
97	102	Namibia	43.9	22.5	97	Paraguay	24.1
98	111	Laos	40.6	20.6	98	Ecuador	24.1
99	98	Ecuador	39.5	24.1	99	Sri Lanka	23.8
100	103	Bolivia	39.2	22.4	100	Senegal	23.7
101	88	Botswana	38.7	25.4	101	Honduras	23.0
102	91	El Salvador	37.0	24.8	102	Namibia	22.5
103	93	Uzbekistan	37.0	24.5	103	Bolivia	22.4
104	104	Guatemala	36.8	22.4	104	Guatemala	22.4
105	95	Egypt	36.6	24.2	105	Ghana	22.3
106	87	Tanzania	36.6	25.6	106	Pakistan	22.3
107	116	Cameroon	35.5	20.0	107	Tajikistan	22.2
108	112	Uganda	34.9	20.5	108	Cambodia	21.5
109	94	Nepal	34.3	24.4	109	Malawi	21.4
110	113	Bangladesh	33.3	20.4	110	Côte d'Ivoire	21.2
111	106	Pakistan	32.5	22.3	111	Laos	20.6
112	108	Cambodia	31.1	21.5	112	Uganda	20.5
113	117	Zimbabwe	30.5	20.0	113	Bangladesh	20.4
114	110	Côte d'Ivoire	30.4	21.2	114	Madagascar	20.4
115	120	Zambia	30.0	19.4	115	Nigeria	20.1
116	107	Tajikistan	30.0	22.2	116	Cameroon	20.0
117	90	Rwanda	28.3	25.1	117	Zimbabwe	20.0
118	124	Ethiopia	27.5	18.1	118	Burkina Faso	20.0
119	127	Myanmar	24.0	17.7	119	Algeria	19.5
120	123	Togo	23.2	18.5	120	Zambia	19.4
121	125	Benin	20.7	18.1	121	Mali	19.2
122	122	Mozambique	20.1	18.7	122	Mozambique	18.7
123	114	Madagascar	19.2	20.4	123	Togo	18.5
124	129	Yemen	18.5	13.6	124	Ethiopia	18.1
125	118	Burkina Faso	18.4	20.0	125	Benin	18.1
126	128	Guinea	18.1	17.3	126	Niger	17.8
127	109	Malawi	18.0	21.4	127	Myanmar	17.7
128	121	Mali	17.5	19.2	128	Guinea	17.3
129	126	Niger	5.6	17.8	129	Yemen	13.6

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The first author Enriko Ceko carried out the basic analysis and draft writing of the paper, including statistics, while the second author Reis Mulita had the responsibility regarding the literature overview and the third author the final writing up and all discussions in the paper

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