JOSEPH C.M KOLLIE

THE IMPACT OF E-COMMERCE ON THE GERMAN ECONOMIC GROWTH (1986-2019)

MSc. THESIS

JANUARY, 2023

NEAR EAST UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

DEPARTMENT OF BUSINESS ADMINISTRATION

THE IMPACT OF E-COMMERCE ON THE GERMAN ECONOMIC GROWTH (1986-2019)

MBA. THESIS

JOSEPH C.M KOLLIE

Nicosia

JANUARY, 2023

NEAR EAST UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

DEPARTMENT OF BANKING AND FINANCE

THE IMPACT OF E-COMMERCE ON THE GERMAN ECONOMIC GROWTH (1986-2019)

MBA. THESIS

JOSEPH C.M KOLLIE

Supervisor

Assist Prof. Dr. MEHDI SERAJ

Nicosia

JANUARY, 2023

Approval

We certify that we have read the thesis submitted by **JOSEPH M.C KOLLIE** titled **"THE IMPACT OF E-COMMERCE ON THE GERMAN ECONOMIC GROWTH (1986-2019)"** and that in our combined opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Educational Sciences.

Examining Committee	Name-Surname	Signature
Head of the Committee:	Prof. Dr. Serife Zihni Eyupoglu	
Committee Member:	Dr. Abidemi Somoye	
Supervisor:	Asst. Prof. Mehdi Seraj	

Approved by the Head of the Department

03./2./2023

Assoc. Prof. Dr. Serife Zihni Eyupoglu

Head of Department

Approved by the Institute of Graduate Studies

…/…../20…

Prof. Dr. Kamil Hüsnü Can Başer

Head of the Institute

Declaration

I hereby declare that all information, documents, analysis, and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of the Institute of Graduate Studies, Near East University. I also declare that as required by these rules and conduct, I have fully cited and referenced information and data that are not original to this study.

JOSEPH C.M KOLLIE

…../…../…..

Acknowledgment

I want to thank the Almighty Allah for being merciful and forgiving of my shortcomings. To top it all off, I'd like to thank him for the kindness he's shown me. Please know how much I appreciate all that you have done to help me get to this point.

I'd like to thank the following amazing individuals because it's highly unlikely that I would have been able to finish this dissertation without them.

Near East University's Department of Business Administration in the Faculty of Economics and Science, and in particular Professor Dr. Serife Zihnni Eyupoglu, my college dean, and Associate Professor Dr. Mehdi Seraj, my advisor, for their guidance and expertise throughout this project. All the students in the MBA program also have my deepest appreciation.

Sincere gratitude and utmost respect go out to Miss Hawa Kengo, whose remarkable financial support has allowed me to make academic progress (I apologize in advance for any extra stress this may cause my dear sister). You have no idea how much I value all that you have done for me.

I owe a tremendous debt of gratitude to the Lord Mayor, His Excellency Jefferson Tamba Koijee, for allowing me to reach this pinnacle of academic achievement. Thanks to the Lord Mayor's unflinching support, I was able to pull this off.

And I would also like to express my deepest gratitude to my family for the unwavering support they have given me throughout my academic sojourn, making ample time and effort to see me attain this congenial academic maestro as they galvanized all resources up to the completion of this study, which culminated in more than a year away from home, you were always available to replicate financial cut-in space, thanks! I'd also like to express my appreciation to everyone who assisted me throughout the course of this study. I'd like to extend my special thanks to everyone who has prayed for me or wished me well, especially my brothers Michael Boam, Andrew Neufville, Abdul Pabai, Adama Kamara, Mohammed Bamba, and the list goes on.

I'd want to thank my moms, Mrs. Korpo Mulubah and Mrs. Etta Boam, for all the love and encouragement they've shown me as I've worked to earn my master's degree. How incredibly blessed I am to call you both moms has not gone unnoticed by me. I am aware of all of the fun moments I've had with you guys, I realize that even a lifetime isn't nearly enough time to appropriately celebrate all of the milestones we've achieved together as a family and all the amazing experiences we've had and not abdicating all the incredible adventures we've had together in a manner that is befitting of the magnitude of those accomplishments. I would like to take this opportunity to convey my appreciation to you for being there for me for the length of my life as a friend, confidant, protector, and mentor.

My deepest thanks go out to you all for being my heroes and for your selfless acts of kindness; may the Lord grant you a long and healthy life so that you may reap abundantly from your labors

Abstracts

THE IMPACT OF E-COMMERCE ON THE GERMAN ECONOMIC GROWTH (1986-2019)

Kollie M. C Joseph

Supervisor, **Assist. Prof Mehdi Seraj**

MA, Department of Business Administration

January 2023, 98 pages

The impact e-commerce has had on the growth of economies in recent years has been surprising in its scope and magnitude. This research was conducted to understand the extent to which the rise of e-commerce has impacted the growth of the German economy. This research also investigates the positive and negative effects of the introduction of e-commerce on the German economy and the difficulties that have surfaced as a direct consequence of its use. Utilizing the Augmented Dickey-Fuller (ADF) model and the Philip-Perron experiment, the authors of this study explored the short-run and long-run correlations between Germany's economic growth and e-commerce from 1986 to 2019. Both models were utilized to understand whether or not there is a link between the two variables. It is conceivable to conclude that the findings of this research prove that the practice of electronic commerce has a beneficial impact on the economy of Germany. This is supported by the fact that exports of goods and services amount to (0.04) and a positive coefficient of 0.07 in the long run. On the other hand, information and technology (ICT) is statistically significant at the 5 percent level but had a negative coefficient in the long-run analysis.

In contrast, gross domestic product (GDP) and EGS are statistically significant at the 0.04 percent level respectively which means that there is a positive relationship between both, this means that for every one-unit rise in EGS, there is a corresponding 0.150934 – unit increase in GDP at a significance level of 0.0481. The data were subjected to a unit root calculation, and the analysis concluded that there is a positive correlation between the use of electronic commerce and the growth of Germany's economy. A comprehensive analysis of the information at hand determined that there would be a beneficial influence on

economic growth. This result led to the drawing of the following conclusion: It was revealed that conducting business via the internet has a beneficial impact, it is recommended that a solution be found to the issue of cost development, finance, data privacy, and data protection, which is an ethical business approach. It not only aims to benefit consumers and firms by saving money and time but also helps consumers and firms increase their total productivity. According to the findings of the research, it is recommended that a solution to the following should be properly handled; focus on customer satisfaction, invest in digital marketing, expand the product offering, utilize cross-border selling and prioritize security

***Keywords*:** E-commerce, Gross Domestic Product, Information and Technology, Market Capitalization

Özet

E-TİCARETİN ALMAN EKONOMİK BÜYÜME ÜZERİNDEKİ ETKİSİ (1986-2019)

Kollie M. C Joseph

Danışman: Assist. Prof Mehdi Seraj

MA, İşletme Bölümü

Ocak 2023, 99 sayfa

E-ticaretin son yıllarda ekonomilerin büyümesi üzerindeki etkisi, kapsamı ve büyüklüğü açısından şaşırtıcı olmuştur. Bu araştırma, e-ticaretin yükselişinin Alman ekonomisinin büyümesini ne ölçüde etkilediğini anlamak için yapılmıştır. Bu araştırma aynı zamanda e-ticaretin Alman ekonomisi üzerindeki olumlu ve olumsuz etkilerini ve kullanımının doğrudan bir sonucu olarak ortaya çıkan zorlukları da incelemektedir. Bu çalışmanın yazarları, Augmented Dickey-Fuller (ADF) modelini ve Philip-Perron deneyini kullanarak, 1986'dan 2019'a kadar Almanya'nın ekonomik büyümesi ile e-ticaret arasındaki kısa ve uzun vadeli korelasyonları araştırdı. iki değişken arasında bir bağlantı olup olmadığını anlayın. Bu araştırmanın bulgularının, elektronik ticaret uygulamasının Almanya ekonomisi üzerinde olumlu bir etkisi olduğunu kanıtladığı sonucuna varmak mümkündür. Uzun dönemde mal ve hizmet ihracatı tutarının (0,04) olması ve pozitif katsayısının 0,07 olması da bunu desteklemektedir. Öte yandan, bilgi ve teknoloji (BİT) yüzde 5 düzeyinde istatistiksel olarak anlamlıdır ancak uzun dönem analizinde negatif bir katsayıya sahiptir.

Buna karşılık, Gayri Safi Yurtiçi Hasıla (GSYİH) ve EGS sırasıyla yüzde 0,04 düzeyinde istatistiksel olarak anlamlıdır, bu da her ikisi arasında pozitif bir ilişki olduğu anlamına gelir, bu, EGS'deki her bir birimlik artışa karşılık gelen 0,150934 - birim olduğu anlamına gelir. GSYİH artışı 0,0481 anlamlılık düzeyinde. Veriler birim kök hesaplamasına tabi tutuldu ve analiz, elektronik ticaretin kullanımı ile Almanya ekonomisinin büyümesi arasında pozitif bir ilişki olduğu sonucuna vardı. Eldeki bilgilerin kapsamlı bir analizi, ekonomik büyüme üzerinde faydalı bir etki olacağını belirledi. Bu sonuç şu sonucun çıkarılmasına yol açmıştır: İnternet üzerinden iş yapmanın faydalı bir etkiye sahip olduğu ortaya çıkmış, maliyet geliştirme, finans, veri gizliliği ve veri koruma konularında çözüm

bulunması tavsiye edilmektedir. etik bir iş yaklaşımıdır. Paradan ve zamandan tasarruf ederek tüketicilere ve firmalara fayda sağlamayı amaçladığı gibi, tüketicilerin ve firmaların toplam verimliliklerini artırmalarına da yardımcı olur. Araştırmanın bulgularına göre, aşağıdakilere yönelik bir çözümün doğru bir şekilde ele alınması önerilmektedir; müşteri memnuniyetine odaklanmak, dijital pazarlamaya yatırım yapmak, ürün sunumunu genişletmek, sınır ötesi satıştan yararlanmak ve güvenliğe öncelik vermek

***Anahtar Kelimeler*:** E-ticaret, Gayri Safi Yurtiçi Hasıla, Bilgi ve Teknoloji, Piyasa Değeri

Table of Contents

CHAPTER III

CHAPTER V

CHAPTER VI

List of Tables

List of Figures

Abbreviations

ADF: Augmented Dickey-Fuller

ARDL: Auto Regression Distributed Lag

B2A: Business to Administration

B2B: Business to Business

B2C: Business to Consumer

C2C: Consumer to Consumer

C2B: Consumer to Business

EC: Electronic Commercial

EGS: Export of Goods and Service

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

ICT: Information, Communication, and Technology

MC: Market Capitalization

OLS: Ordinary Least Square

OECD: Consumer Protection in E-commerce

PP: Philip-Perron

SMEs: Small Medium Enterprises

UNCTAD: United Nations Conference on Trade and Development

UT: Error Term

VAR: Vector Autoregressive

WTO: World Trade Organization

WBDI: World Bank Development Index

CHAPTER I

Introduction

E-commerce is simply the term given to the process of conducting business activities via the internet. Even though it is a concept that has only been around for a short while, there is the possibility that it will alter the way that economic activities have been traditionally carried out. It is already having a substantial impact on major businesses such as communications, finance, and retail trade, and it demonstrates potential in other fields including education, health, and the public sector.

E-commerce platforms are now available for nearly every element of our day-to-day lives, ranging from the execution of online trading, banking, and transactions to purchases of things for personal use and at home. In today's global market, these platforms may be found worldwide. Because having access to the internet has evolved into a necessity in this century, there will be a mad dash to grow businesses and make more sales via the internet. E-commerce is expanding all across the world as a result of improvements in both the affordability and consistency of internet connectivity.

In most of today's corporate world, you must have an internet presence in order to start a business. Because of the Internet, businesses of all kinds have access to new marketing prospects. These changes have enabled them to boost their sales, cut their expenses, and keep a direct connection with their customers, all of which have significantly contributed to the expansion of the economy.

E-commerce is a global innovation that has reached a tipping point in global trade, allowing enterprises to penetrate new markets at a breakneck pace while also increasing economic efficiency and productivity. Incorporating e-commerce into a company's operations is an innovative move, according to Schumpeter's (1934) definition of innovation as ideas that serve to lower costs while simultaneously increasing quality and performance

A business enterprise's success in e-commerce depends on its ability to utilize the internet and information technology, which includes electronic data interchange (EDI). When it comes to e-commerce, an internet site alludes to a vendor's website that allows customers to purchase things or services from the seller all at once through the internet platform.

As a direct result of the explosive growth of the internet, an increasing number of new economic subfields are coming into existence. The volume of business conducted online is rapidly increasing, and people are now able to obtain a wider range of goods

and services from a wider number of firms, both domestic and foreign, thanks to the continued rise in popularity of online shopping, also known as e-commerce. E-commerce not only makes it easier to build new distribution channels, service models, and business models, but it also makes it easier to streamline the processes involved in providing customer support.

The benefits of e-commerce include, among other things, increased efficiency, improved asset utilization, accelerated delivery to markets and customers, and also enhanced customer service and satisfaction. As a consequence of this, it really shouldn't come as much of a shock to learn that the supplementary benefits that electronic commerce brings to the table, for both manufacturers and customers, have a constructive effect on the progress of the world economy. To get more specific, during the times of the COVID-19 pandemic, a total lockdown was imposed in every country. The global economy became increasingly dependent on the continuation of electronic commerce, in the deliverance of goods and services. If online commerce is going to continue its rapid expansion, there is no way to overstate the significance of the challenges posed by security threats, fraudulent activity, and other associated issues.

The emergence of e-commerce has had a significant impact on Germany's economic growth. It has drastically changed how people shop, reducing the need to visit traditional brick-and-mortar stores. As a result, more businesses are now taking their operations online while providing customers with more convenient shopping experiences. Moreover, e-commerce in Germany has become an important driver of economic growth. According to the Statista Digital Market Outlook, the e-commerce market in Germany is one of the largest in Europe and was valued at almost 78.5 billion US dollars in 2020. This number is expected to rise to almost 95.2 billion US dollars in 2024, as e-commerce continues to gain in popularity. The growth of e-commerce in Germany has been particularly beneficial to small and medium-sized businesses (SMEs). With online stores, SMEs can easily reach a broader customer base while keeping their costs low. This is especially true for those businesses operating in niche markets, which may not be able to compete with larger, more established companies in traditional brick-and-mortar stores. Thanks to e-commerce, SMEs now have a new and powerful way to reach potential customers. Furthermore, e-commerce has spurred job creation in Germany. A large number of jobs have been created in industries such as software development, customer service, logistics, and warehousing. This, in turn,

has led to greater economic growth as more people in Germany are now earning a regular paycheck. Moreover, the growth of e-commerce has fostered the development of new business models and industries, such as software and automation, resulting in additional job opportunities. E-commerce in Germany has also changed the way consumers shop. Thanks to the convenience offered by e-commerce platforms, consumers are now able to purchase products at any time and from any location. This level of convenience has increased consumer confidence in online shopping and has caused an increase in online purchases. This, in turn, has helped boost retail spending in Germany, contributing to economic growth. E-commerce in Germany has had a profound effect on the country's economic growth. The growth of e-commerce has enabled small and medium-sized businesses to reach a wider customer base, resulted in the creation of new jobs, and increased consumer spending, all of which are driving economic growth. Thus, e-commerce will continue to be an important factor in Germany's future economic development.

The modern corporate environment has become more dynamic as a direct result of the rapidly changing nature of our competitively digitalized world, which is defined by the rise of internet commerce and social media (e-commerce). Because of this dynamic, businesses that are able to adapt and advance have a greater chance of becoming successful (Rahayu & Day, 2015). The concepts and technical underpinnings of Web 2.0 are what make it possible to create business enterprise user-generated content. The Internet-based applications known as social media depend on these principles and underpinnings (Kaplan & Haenlein, 2010).

The market's dynamics and characteristics have shifted as a direct result of the increased availability of e-commerce. It has been observed that businesses can benefit greatly from combining online shopping with participation in social networking. For instance, businesses can use social media to develop, market, and distribute products; communicate with customers; improve customer retention and relations; and communicate with customers in order to support, enhance, and supplement economic growth.

Globalization and information technology (IT)

Globalization and information technology (IT) are changing the way firms conduct their company operations in order to maximize profit margins. To prepare for future growth, the vast majority of organizations have made critical investments in

Information technology infrastructure, and almost all of them have finished the deployment and integration of their information technology system. The use of electronic commerce (EC) as a means of carrying out commercial transactions is receiving an increasing amount of attention. It will be possible for small and medium-sized businesses (SMEs) to link "Just in Time manufacturing" and "Just in Time" to their business partners, who will then expand their strategic capabilities across the world (R. E. Walch, 2009). E-commerce, for example, will be associated with any type of information, services, products, or online payments that are delivered over phone lines, personal computers, networks, or other means of communication when viewed from the perspective of communications. With regard to business operations, E-commerce makes use of technology to shape and streamline company transactions and workflows in order to increase the efficiency of those processes.

With regard to services, e-commerce is a means of lowering the cost of services while boosting production efficiency and expediting service delivery. It is a method that satisfies industry desires, consumer demands, and management requirements while also meeting the expectations of customers. It is a means of decreasing service prices while simultaneously enhancing production efficiency and speeding up service delivery to customers through the use of the internet. It is possible to shop and distribute items and information through the internet and other internet-based resources. Because of the extensive use and quick expansion of the Internet and network technology, the electronics industry has emerged as a critical arena for modern enterprises to operate. Extensive commercial operations are now done totally online, resulting in significant time and money savings for all parties involved. There are millions of individuals all over the world who use the website to buy and sell products and services, and it is difficult to carry out a large number of transactions if the internet infrastructure is not functioning properly (E. Turban, J. Whiteside, D.King and J. Outland, 2017)

History of E-commerce

Commerce has been established for a significant number of years, moving from a barter system in which things were swapped for other products to the usage of precious metals, and now coins, paper money, and eventually plastic money, such as Visa cards, to enable transactions. Ancient commerce was primarily conducted face to face as a result of the fact that it was highly specific to a geographical location, where

personal engagement is high and goods and services are delivered immediately, with the exception of during fixed operating hours, which were typically throughout the day. The advent of the internet paved the way for the development of an industry known as electronic commerce. E-commerce is described as the process of purchasing and promoting goods or services through the use of electronic media such as the internet. Some examples of companies that engage in e-commerce are Amazon, Flipkart, Shopclues, and Snapdeal, along with other businesses that are comparable. E-commerce sales are typically conducted over the internet, with the possibility of reaching a global customer base. Although it is accessible twenty-four (24) hours a day, seven (7) days a week, it is not a social network due to the limited opportunities for personal connection, the possibility of delays in the delivery of goods and services, and the constant availability of the platform. E-commerce has improved in both cost-effectiveness and efficiency since the advent of the internet, which has led to an increase in the number of people shopping online. The way industrial transactions are handled on the internet has undergone a significant transition in the last couple of years, according to industry experts. As of right now, customers can shop for goods and services on the internet from practically any location and at any time of the day or night, as long as accessible on the web. This is true regardless of whether they are in Cyprus or another country. Purchase, selling, and speaking with business owners are all now possible for customers who use the internet to undertake online banking and investment activities, among other things. Customers can even do online banking and financial transactions using the website. As a result, according to Laudon & Laudon (2013), electronic products or services are given through the use of a computer or other electronic equipment In addition to e-commerce, mobile commerce and social media commerce are also forms of business. Because of mobile commerce, users and businesses may complete transactions such as bill payment, mobile banking, tax payment, and ticket booking from their phones or tablets in real-time without having to wait. There has also been a proliferation of social commerce platforms like Facebook, Instagram, WhatsApp, and Twitter, all of which assist vendors in marketing themselves and selling their goods and services. The use of several payment methods, such as credit/debit cards, prepaid cards, gift cards, web banking, and an e-wallet that is linked to your bank account, is made possible by e-commerce, which enables you to make purchases of goods and services over the internet. An increasing trend, such as the use of cryptocurrencies like bitcoin and Ethereum, is also becoming more popular.

E-commerce platforms have a number of advantages over traditional brick-and-mortar stores, including lower inventory costs, higher profit margins, a wide variety of discounts, and the capacity to deliver goods and services without the need for human intervention, to name a few advantages. This has resulted in widespread adoption of these platforms across a diverse variety of industries, including shopping, travel & leisure, video streaming, and money services, among others.

The Federal Republic of Germany's e-commerce platform market is primarily driven by the country's high internet penetration and the accumulation of high-quality gadgets. Given that our world is becoming more and more urbanized, it is inevitable that more and more traditional brick-and-mortar businesses will resort to e-commerce platforms in order to grow their customer base, reduce overhead expenses, and improve product sales. Furthermore, the increasing quality of online purchasing, particularly among millennials and, as a result, among the urbanized population, for the convenience and threshold delivery that it provides, is contributing to the expansion of the country's market as a whole. Increased client awareness of the numerous benefits of e-commerce platforms, such as easy access to product information, shipment, and delivery status tracking, secure payment gateways, a variety of discounts and cashback offers, and so on, is a key component of the company's dynamic business growth. Diverse foreign e-commerce enterprises, such as those that provide it location terminals, app-based industrial platforms, international shipping choices, and a variety of other e-commerce services, are opening their doors to German consumers, further raising demand. Despite the fact that various factors, such as the combination of online platforms with advanced technologies such as live tracking, artificial intelligence, prognostic analytics, and others, as well as a shift to online retail channels to mitigate the danger of viral infection during human interactions. The COVID-19 pandemic, which has already pushed the market toward the electronic market due to the rapidly evolving nature of our competitively dwindling industry, has continued to push the market forward in the short term due to the likelihood of success for businesses that can modify and adapt being greater than it was before (Rahayu & Day, 2015).

This has become clear that both the use of social media and the practice of shopping online are significant contributors to Germany’s economic growth. When it comes to social media, for example, it is needed to facilitate, improve, or supplement

traditional and online selling activities. Additionally, it is frequently used to assemble marketing information through e-commerce (Abed, Dwivedi, & Williams, 2015).

In order to make the most of this complementary relationship, social media has made it possible for companies of all sizes to achieve success in a diverse range of marketplaces all over the world by means of social media advertising, connection growth, and customer service (Saravanakumar and SuganthaLakshmi, 2012).

People who do their shopping online are able to interact with businesses through the use of graphics, advertisements, and customized purchase options made available by E-commerce selling tactics. Because of this, it should not come as a surprise that a significant number of companies, particularly in the U.S, were said to have utilized Facebook and Instagram for the purpose of trade in the year 2018. (Statista, 2019a). As a result, a rising number of customers and companies are turning to this method of conducting business online (Grange, Benbasat, & Burton-Jones, 2020).

Covid-19 compacts the entire e-commerce world into a completely new dimension, bringing with it new realities and trends; it has changed the nature of business and the acceptance of consumers as they adjust to the new reality.

Online trade is crucial to the German economy for numerous reasons. To start, Germany is a prime market for internet retailers because it boasts one of Europe's largest and most developed economies. In addition, many people in the country use the internet and mobile devices extensively and frequently engage in online shopping. As a result, there is a sizable market for online stores to serve. Recognizing the potential for economic growth and job creation, the German government has also taken efforts to promote and support e-commerce. The result has been an improved climate for e-commerce firms, which has helped fuel the industry's expansion. All things considered, e-commerce is a huge deal in Germany's economy and it's just going to get bigger from here.

With more individuals seeking the safety and convenience of online buying in the wake of the COVID-19 outbreak, e-commerce in Germany has seen a considerable uptick.

A lot of companies are adjusting to the new normal by providing online purchasing and shipping directly to customers' homes. Sales have increased across the board, but especially at online marketplaces like Amazon and eBay and at locally owned businesses. People are increasingly using their smartphones to make purchases online, a tendency that has been boosted by the pandemic. Advertising on social media

sites like Instagram and Facebook has also been used to boost product sales. As a result of the pandemic, more people are buying their food supplies online rather than at traditional supermarkets. Overall, the epidemic has hastened Germany's transition to online shopping, and this tendency is expected to continue. Companies who haven't embraced online sales will soon find themselves at a competitive disadvantage against those that have.

International business-to-consumer e-commerce sales were $2.053 trillion in 2016, according to eMarketer (2016). Delivery alternatives, and expansion of major brands into new foreign markets, are important considerations. The web and e-commerce are revolutionizing the way in which businesses are run by rethinking business processes such as product invention and development, manufacturing, warehousing, marketing, and customer service, amongst other facets of corporate operations. The altering responsibilities and relationships of process actors are creating new networks, services, and business models. It has increased efficiency, facility utilization, and time to market (ECLAC, 2002).

E-commerce is presenting huge prospects for small, medium, and large businesses, as well as for internet investors. When it comes to determining the potential of e-commerce enterprises during the past years, you don't have to look very far, according to a recent report from the World Economic Forum, businesses' connections with one another, customers, and governments are fast altering as a result of e-commerce. Many emerging and developing nations are witnessing significant expansion in e-commerce as a result of changes in the information, communications and technology landscape, according to the UNCTAD/IER/2015 report.

Businesses in developed countries will gain from e-commerce because it will allow them to have greater control over their supply chain, hence enhancing their efficacy in the marketplace (Molla and Heeks, 2007). As the international economy continues to flourish, electronic commerce will continue to evolve and thrive. Engagement in company-to-customer dialogues has increased as a result of the exponential growth of social networks in recent years, making it easier to execute business transactions on the internet. Because of technological advancements, online businesses are searching for more content and a more realistic shopping experience for their customers to provide them. More and more consumers are attempting to shop online in order to stay up with the rapid growth of e-commerce.

The introduction of electronic commerce has resulted in changes in the way commercial institutions work, and this has had both harmful and beneficial consequences for corporate social responsibility. While e-commerce in Germany has evolved swiftly, internet connections, the spread of mobile phones, and the ability to purchase on mobile devices have all increased, and e-commerce has increased its importance in Germany since its inception. It creates a new electronic marketplace where prices are transparent and marketplaces are worldwide, and trading is very efficient.

Facilitators of electronic commerce

Internet

In recent years, there has been a substantial increase in the usage of the internet and smart mobile devices, both of which have become commonplace in the lives of the majority of people. This has led to the growth of the e-commerce industry. Despite the fact that the internet has its shortcomings as a source of information, it continues to be a practical medium through which individuals and companies can shop, read, communicate, and acquire services. As a result of the ability of digital networks to quickly communicate with clients, the supply chain has become lean and intelligent in today's world. This has helped to reduce pollution and stimulate the formation of environmentally conscious firms. It has taken the economy to previously imagined levels of growth and development in just 15 years as a result of the revolution in information and communications technology (ICT). Because of the rapid advancements in technology that have taken place over the past few years, the online world and the products and services it offers have been instrumental in the development of new markets.

The number of individuals who used the web skyrocketed at a rate that had never been witnessed before with the advent of the World Wide Web and the expansion of the availability of multimedia material. As a result, the internet has progressed at a rate that is even faster than that of any previous communication medium, including television. This is a positive development, as reported by the United Nations' International Telecommunication Union (ITU), 4.9 billion people were connected to the internet in 2020, according to the ITU's projection. The world's population has exceeded 7.8 billion people in November 2021. According to the International Telecommunication Union (ITU 2021), there are 2.9 billion individuals

who do not have access to the internet. Approximately 96% of these people live in developing nations. In addition, a significant portion of the 4.9 billion people who are referred to as "Internet users" have restricted access because they make use of shared equipment or have slow connection speeds.

Payment Method

Among the most significant considerations while doing a transaction on the internet are the payment methods that are used, such as savings cards, credit cards, online banking purchases, and digital funds transfers. In order to maintain a healthy future e-Commerce environment, price gates are required; yet, as a result of this transition, the environment is shifting away from cash and toward digital currency.

Analytics

Analytics is a scientific technique for converting information included within statistics into a form that can be used to make decisions in a timely manner. Companies can benefit from analytics by assisting them in collecting, organizing, evaluating, and commenting on data pertaining to their customers. Given the massive increase in data volume, businesses are becoming increasingly reliant on research to better understand their customers' behavior. When determining the return on web investments and the effectiveness of a channel mix, retailers should have real-time to access data that is entered into rules. However, in order to gain insight into customer behavior, average system volume, scramble altar measurement, and transformation ratios are required. This necessitates the application of a more in-depth analytical technique in the context of e-commerce organizations.

Social Media

Customers and businesses alike can benefit from using social media to generate and share material related to products that are offered online. This content can take the form of reviews, ratings, and images showcasing the products in action. This kind of information exerts a substantial amount of influence over prospective clients, and any company that operates an online storefront ought to give serious consideration to the possibility of conducting business via social media. In a nutshell, the use of social media platforms such as Facebook, Instagram, Whatsapp, YouTube, and Tiktok, as well as e-commerce transaction websites, makes running a business easier and more

cost-efficient. The use of social media helps businesses save money, save time, decrease errors that are costly, increase conversion, and get rid of headaches caused by unhappy customers.

Customers who do their shopping online want to be provided with as much information as possible about the items they purchase.

Small and medium-sized enterprises (SMEs) rely on traditional media to advertise their products on a regular basis, which is consistent with their business model. When it comes to associative media, blogs and computer functions are utilized to connect with, but not necessarily exchange information with, mean individuals on the internet.

Kinds of Online Business

There are six fundamental sorts of electronic commerce that you should be aware of:

1. Business-to-Business (B2B). This kind of transaction could involve a producer and wholesaler, or a wholesaler and a buyers. When referring to commercial transactions, the phrase "business-to-business" refers to those that take place between two or more organizations as opposed to those that take place between a company and a single individual shopper.

2. Businesses that offer their wares and services straight to individual customers are referred to as "business-to-consumer" (B2C) companies. Direct sales to end users, or business-to-consumer (B2C) marketing, refers to the practice of selling products and services to consumers who will go on to make the actual purchase. The B2C category encompasses the vast majority of businesses that deal directly with end users.

3. Consumer-to-consumer (C2C) is a commercial enterprise model in which third-party agencies facilitate transactions between private individuals and businesses on the basis of products and capabilities rather than transactions between businesses and customers on the basis of a single commodity known as consumer-to-consumer (C2C).

4. Consumer-to-business (C2B) the consumer-to-business (C2B) e-commerce model first authorizes groups of buyers before allowing them to enter into a mutually beneficial relationship. It is diametrically opposed to the normal business setup: As a result of this relationship, customers generate value that a business firm employs in accordance with the utilization of a business process while also reaping competitive knowledge

5. Business-to-administration (B2A) this component comprises internet transactions that take place between businesses and the government and that take place through a website. In addition to taxation, social services, healthcare, legal papers and recordkeeping, and other relevant areas are included by this umbrella term as well. As a result of increased investment in e-government efforts in recent years, these service delivery modalities have been significantly enhanced in scope.
6. Consumer-to-administration (C2A) Consumer-to-Administration is a concept that incorporates all electronic transactions between individuals and the government. Education - disseminating information, remote literacy, and so on – are examples of operations. Social Security - via, processing payments, and so forth

Statement of the Problem

E-commerce has been expanding at an annual pace in Germany and other countries over the course of the last decade, becoming an increasingly important component of an increasing number of economies. The impact of e-commerce on the German economy can be seen as both positive and negative. On the positive side, e-commerce has the potential to drive economic growth by increasing efficiency and convenience for consumers, creating new business opportunities for entrepreneurs, and generating tax revenues for the government. On the negative side, e-commerce can also have negative impacts on traditional brick-and-mortar businesses and on employment, as it may lead to the closure of physical stores and the displacement of workers.

One of the main challenges for policymakers in Germany is to find ways to balance the benefits and challenges of e-commerce, while also addressing issues such as consumer protection, data privacy, and competition. Policymakers may need to consider measures to support small businesses in adapting to the digital economy, as well as to ensure that workers are protected and have access to new opportunities in the e-commerce sector.

Purpose of the study

E-commerce has seen stratospheric expansion over the past decade, and the introduction of covid-19 has even helped to propel it to new heights of business success and public attractiveness. The purpose of the study of the impact of e-commerce on the German economy's growth is to understand how the adoption and expansion of e-

commerce in Germany have affected the country's economic growth. This includes analyzing the economic impacts on various sectors of the economy, such as retail, manufacturing, and logistics, as well as the overall impact on the country's gross domestic product (GDP). The study may also aim to identify any challenges or opportunities presented by e-commerce for the German economy and to provide recommendations for policymakers and business leaders on how to best leverage the potential of e-commerce to drive economic growth.

Research Question

The following research questions will be considered in response to the purpose of the study, as they are as follows:

1. What is the impact of e-commerce in Germany?
2. What are the benefits of E-commerce in Germany?
3. What are the challenges associated with e-commerce in Germany?

Hypothesis

See the following Null hypothesis:

H0. There is no significant influence of e-commerce on consumers.

H0. There is no significant relationship between the income of consumers and purchase decisions.

H0. There is no significant relationship between E-commerce and Economy growth

H0. There is no significant relationship between usage of the internet and Smartphone users.

These are the alternative hypothesis:

H1. There is a significant influence of e-commerce on consumers.

H1. There is a significant relationship between the income of consumers and purchase decisions.

H1. There is a significant relationship between E-commerce and Economy growth

H1. There is a significant relationship between the usage of the internet and Smartphone user.

Significance of the Study

The study of the impact of e-commerce on the German economy is significant because it helps to understand the role that e-commerce plays in driving economic growth in Germany. This can inform policy decisions and business strategies related to e-commerce and help to identify areas of opportunity for further growth. Additionally, understanding the impact of e-commerce on the German economy can provide insights into how other countries can leverage e-commerce to drive economic growth and development. E-commerce brings the German economy several benefits, including a decrease in operational expenses, an improvement in market effectiveness, and increasing efficiency. Applications for electronic commerce come with several limitations that need to be taken into mind, some of which include security concerns, delivery timeframes, and payment methods. This research makes a significant addition by demonstrating how the benefits of e-commerce to the economy may be demonstrated by proving how e-commerce can increase productivity, promote innovation, and improve customer experiences while shopping online.

After the COVID-19 epidemic, the move toward online shopping as a result of lockdowns and social distancing measures contributed to a growth in the relevance of e-commerce within the German economy. This has resulted in an increase not just in the number of firms transitioning to online sales but also in an increase in the sales achieved by e-commerce companies. In addition, the epidemic has hastened the process of consumers and businesses adopting digital technology and making use of online platforms. This pattern is anticipated to persist even after the pandemic has passed, which will result in sustained expansion of the e-commerce industry in Germany over the long run

Additionally, there is the potential for e-commerce to make a positive contribution to environmental protection, both on the part of providers that look ahead and consumers who are ecologically sensitive. By the study conclusions, the general public is projected to gain from an increase in the quantity of imported and exported commodities, a decrease in unemployment, and an increase in national output.

Limitations of the Study

Constraints, which are elements that limit the number of studies that may be undertaken, characterize the bulk of research programs. As a result, the study has

constraints such as a lack of financial resources and materials to undertake this research. This research will be broken up into five chapters, each of which will investigate the influence that e-commerce has had on the economy of Germany, as well as the positives and negatives associated with conducting business online in the country. As a direct consequence of this, there have been relatively few academic and field investigations carried out on the subject. In addition, it can be challenging to acquire the necessary information and knowledge. The information was taken from a data set maintained by the World Bank.

The investigation will extend over a period of 33 years (1986-2019). The focus of the study is restricted to e-commerce in Germany and the impact that it has on the expansion of the German economy. The length of time that will be necessary to complete this inquiry, as well as the difficulty in gathering data that is exact and precise, are both substantial obstacles.

Definition of Key Terms

E-Commerce - E-commerce, which may be defined as the buying and selling of products and services, as well as the interchange of payments and information, using a computer network, with the internet being the most prominent platform, can be broken down into several different categories. Additionally, e-commerce refers to the process of conducting business over the internet (Anuji K, Fayaz F, Kapoor N, 2018).

GDP Growth - The rate at which the economy is growing or contracting can be determined by analyzing the growth in gross domestic product (GDP), which is measured in percentage terms. The personal consumption expenditure part of the gross domestic product is the most important of the four components that make up the GDP. In each particular period, growth represents the economy's position within the economic cycle. Because real GDP is adjusted for inflation, it is necessary to use it when comparing one year to another.

Market capitalization - The market capitalization (also known as market value) of publicly traded domestic companies can be calculated by multiplying the share price by the total number of shares that are currently in circulation (including the various classes of shares). Participation in the competition is not permitted for entities such as investment funds, unit trusts, or corporations whose primary commercial objective is to hold shares of other publicly traded companies.

Exports of goods and services - Products that leave the country's statistical region – also known as merchandise trade – are known as exports. Generally speaking, in the general trade system, the statistical territory of a country is the same as the economic region of the country, and vice versa. Specifically, the statistical territory is defined as only a certain section of the economic territory, specifically that fraction of the economic territory that overlaps with the free circulation region for commodities in the special trade system. The free circulation area is a portion of a country's economic region within which commodities may be disposed of without being subject to Customs regulations.

Information and communications technology (ICT) - is an expression that refers to the technology that is utilized in the administration of communications activities such as telecommunications, broadcast media, intelligent building management systems, multimedia processing, and transmission systems, and internet tracking and management functions.

CHAPTER II

Literature Review

E-commerce and its Evolution

After 1992, the first attempts at electronic sales were made, which marked the beginning of the era of electronic commerce. Because of the development of Global Internet technology, the Internet is accessible to the general public, who did not require any special talents to make use of the network at the time of its introduction. This has resulted in a significant simplification of the use of the Internet, which has progressed from being a storage location for many different sorts of content to a structured environment with which we can all work without trouble today. Ahead of this time, there were the first electronic editions of newspapers and publications available for purchase. These websites later developed into the world's first e-commerce platforms. They did, however, sell advertising space as well as publication through electronic methods rather than through traditional printed media formats. This resulted in an immediate increase in sales opportunities.

In 1994, according to historical archives, one of the earliest documented internet sales took occurred in the United Kingdom. This particular pizza was a pepperoni pizza from Pizza Hut2 that was topped with mushrooms and more cheese, and it had been ordered through a pizza delivery service online. At the time, electronic commerce was only getting started in numerous regions of the world, and the United States was no exception. As a result of this occurrence, many corporations began to make investments in the expansion of internet commerce services. With the exception of a few additional transactions, the maturity of e-commerce transactions consisted primarily of the trading of advertising space, electronic publications, and software during this period. This house was located in a small neighborhood that didn't appeal to a large number of potential purchasers at the time of purchase. In response to the evolution of network technology, new services were available, and new forms of coffers were developed, the functionality of which has been based on the trading of different sorts of goods than was previously the case, according to authors (Tian & Stewart, 2007).

Until recently, e-commerce was not recognized as a distinct sector of the frugality movement, as it is at this time. Rather than being completely rewritten from scratch, the traditional business models were simply adapted for use in the world of internet commerce, rather than being completely replaced. Deciding to take traditional

technology down a new path was a significant step forward in the evolution of human society.

Following the discovery of a new marketable niche for the propagation of their items by merchandisers, other marketable regions appeared on the Internet. Their essence may be summarized as follows: the implementation of sales and services for the benefit of customers. However, it should be highlighted that the company's possibilities for positioning on the Internet were highly promising. First and foremost, the deal landscape was greatly expanded because purchasers were no longer required to physically inspect a product before making a purchase. It was sufficient to just get to the point and uncover all of the pertinent facts, which had an impact on the development of future collaboration opportunities. Certain internet businesses formed as a result of this evolution, the key distinguishing feature of which was the absence of a physical store (Chan, 2001). An illustration of this is the successful development of Amazon.com, which does not require the establishment of physical storefronts. The evolution of e-commerce has progressed tremendously in the previous several years. Diverse coffers were flooded into the transnational network, all of which were in the best possible condition to be dispensed in a matter of hours. A variety of services were also provided, making it easy to transfer funds to the dealer's account with the least amount of difficulty. Purchase and sale are insolvable tasks that cannot be completed without the assistance of money, as is widely known in the business world. As soon as the demand for electronic means arose, it was fulfilled on the spot and without hesitation. There were a variety of payment systems that allowed for the use of electronic money and the ability to input and output data with the assistance of financial institutions to facilitate transactions. The transfer was completed promptly, which was critical for users' convenience. It was as a result that new areas of competence began to grow, such as currency exchange and other financial operations. This conclusion was reached as a result of a predicted series of events like sales, geography became the necessity for the development of electronic money, making international bank transfers is usually the most convenient payment method because they cooperate at the speed required to complete the transaction. All of the causes listed above have contributed to the advancement of e-commerce to the third and present stages of development, respectively (Tian & Stewart, 2007). At this point, we consider e-commerce to be a significant economic booster that is growing daily, with global e-commerce sales surpassing $4.2 trillion United States dollars in 2020. (Daniela, 2022).

Customers determine which services and results are the most important, as the customer is the e-commerce elaboration machine. As a result, e-commerce continues to evolve in response to online client buying patterns. So clients may either have their things delivered the same day they place their order or have a variety of payment options to select from. Similar to this, the most recent service for online-specific consumers has only recently become available in the United States of America, as well. As a result, e-commerce evolves in response to current trends and makes an effort to adapt promptly to customer demand

Benefits of E-commerce

Shahjee (2017) discusses the different advantages and disadvantages of the e-commerce industry. It gives several benefits to businesses, such as an international marketplace to sell their products, which was previously prohibited due to geographical boundaries. It has resulted in lower operational costs such as processing, delivery, and storage. E-commerce also allows for customization, which has revolutionized the way consumers buy things and services because items and services may be tailored to the customers' needs and desires. It also enables businesses to provide round-the-clock support to their clients. Consumers will benefit from 24-hour access, more product and service options, pricing comparisons, and improved delivery service. It also provides societal benefits, such as allowing individuals to connect and allowing more

Dahiya's, (2017) article discusses how merchants and markets have been affected by recent e-commerce developments. It has a variety of market effects, including product promotion, which has reduced the cost of offline advertising, provides customer service online, assists corporations in developing their brand image in a short period, making advertisement a two-way process through which customers can compare the prices of various products and make an informed decision, providing customers with the option of customization, and simplifying the order-making process. E-commerce has an impact on merchants as well. Providing 24/7 access and discounts, has assisted them in expanding their turnover and profit margins. When compared to conventional retailers, online stores have a larger selection of products and superior customer service. Because online retailers offer goods at a reduced price, e-commerce encourages people to window shop at physical stores. The article demonstrates that in

a price-sensitive country like India, e-commerce has a broad scope and has aided in the development of markets and shops. It is generally believed that the advent of digital commerce will boost efficiency as a result of lower costs associated with transactions and searches, increasing levels of competition, and more effective business operations. Examples of enhanced efficiency include lower prices, more precise price adjustments, even if they occur more frequently, and a reduction in the range of prices for products that are otherwise comparable. Because of reduced costs associated with searching the web, people may become even more price-conscious as a direct result of these reduced costs. Despite this, the empirical evidence that has been gathered thus far has been inconclusive. Following the first research, it was discovered that things sold over the Internet were on average more expensive than goods purchased from traditional stores, which was a game-changer.

In his article, Ziaul Hoq (2005) examines the multiple benefits that e-commerce can provide to a company as well as how it may aid in the reduction of a variety of expenses for a variety of businesses. As a result of the growth of e-commerce, the cost of brightly electronic clothing and communication devices has decreased. Because e-commerce necessitates technologically based hardware and software, the decrease in pricing aids in the growth of e-commerce. Simultaneously, e-commerce has aided organizations in considerably lowering their costs. The cost of recruiting new clients has been reduced thanks to e-commerce. E-commerce has enabled organizations that provide knowledge-based products and services to transfer most of their offerings online, lowering costs. Because the majority of the labor is done online, e-commerce has also helped to dramatically reduce the number of people necessary, resulting in cost savings. Not only has e-commerce reduced selling expenses, but it has also reduced purchasing expenditures. Because a good e-commerce system leads to good delivery channels, it has decreased the need for big stocks, lowering prices even more. E-commerce also minimizes the number of middlemen involved in the purchasing and selling process, lowering value-added chain expenses. Last but not least, e-commerce allows businesses to pass on many costs to their customers in the form of self-service, such as shipping fees, lowering their costs. It can be claimed that e-commerce has a significant impact on corporate cost structures as well as the economic growth of countries that engage in e-commerce activities, such as Germany.

According to Ray, Sarbapriya (2011) his research, e-commerce has an impact on business and also presents problems. He asserts that the fall of the fleck-com bubble has prompted numerous firms to recognize that conducting business on the Internet is not as straightforward as it appears at first glance. Without a doubt, the Internet's ability to reach any part of the world holds immense promise for enhancing transnational trade and increasing global economic efficiency in the future. In spite of this, doing business on the Internet has been observed to come with its own set of hazards and legal ventures. To keep up with the rapid-fire speed at which e-commerce development is taking place, the legal system has been struggling and gasping for air. With the advent of e-commerce, anyone may conduct business regardless of their location or time of day. Anyone can purchase or sell anything they choose through the Internet at any time of day or night, as long as they have access to a computer and a web browser, which is available to everyone. Because there is no requirement for a worker to engage in the online electronic trade transaction procedure, the direct price is lower than it would be if the order were placed through more traditional techniques (retail, paper-grounded). In addition, customers who make their purchases online experience fewer processing problems, less wasted time, and greater convenience than those who shop in traditional brick-and-mortar stores. E-commerce is a wonderful choice for selling specialist things because there are typically not many people in the market for such goods. However, due to the expansive nature of the online market, even highly specialized products have the potential to generate high volume sales through the use of the internet. One further important advantage of utilizing this approach is the fact that conducting business via the internet can be done at a much lower expense than traditional methods. E-commerce offers a number of benefits, one of the most important beings that it is the least expensive way to carry out commercial transactions. The day-to-day pressures of running a company have made it more difficult for companies to take advantage of opportunities to invest in the long-term strengthening of their position in the market. The quantity of money that is available for investment has reduced as a result of the maturation of the industry and the growth in the level of competition. If the wholesale price cannot be increased and the production expenses cannot be cut, then the disparity in these figures may be attributable to the manner in which the firm is managed. As a result of the proliferation of e-commerce, which served as a solution, the potential costs that could be incurred have been cut down significantly. Online shopping

presents customers with a number of advantages that are not available in any other format.

As a consequence of this, the purchaser will spend less time making a choice.

1. The purchaser will make more educated acquisition choices
2. Bill and purchase disputes can be resolved in significantly less time than before.
3. An increased number of available choices for acquiring different brands.

Businesses are able to harness the potential of e-commerce and transform themselves into providers of e-business solutions if they utilize reliable turnkey e-commerce solutions given by e-business solution providers. E-commerce provides operational benefits such as reducing the amount of time and employees required for commercial activities, as well as lessening the burden on other resources. This is why it is becoming increasingly popular.

Market access, consumers, suppliers, and contacts

1. Information sharing
2. Improved efficiency
3. Reduced costs
4. Time-saving

E-commerce and its Challenges

A variety of trade barriers, including those identified by Gomez-Herrera et al. (2014) and Gessner and Snodgrass (2015), exist for cross-border e-commerce, despite its benefits. Concerns about data protection and privacy, for example, are frequently expressed; nevertheless, rules to address these concerns are still in the development stage (Meltzer 2019; Wolfe 2019).

The worldwide e-commerce sector is beset by a number of problems, each one of which has the potential to stunt a company's expansion and undermine its overall performance. These difficulties include delays at customs, a lack of clarity regarding return procedures, opaqueness regarding delivery and cost, and a restricted capacity to adjust delivery times and locations (UNCTAD 2015). In addition, businesses who engage in international e-commerce run the risk of being put in a range of dangerous situations regarding politics, the law, and security (Pezderka and Sinkovics 2011).

These concerns do not only affect a select few companies, but rather, they have a disproportionately negative impact on small and medium-sized firms (SMEs). These problems are not limited to only a few businesses (OECD 2019c). In addition, there is

a substantial gap between the levels of e-commerce penetration in affluent countries and impoverished ones (OECD/WTO 2017).

The absence of strong formal institutions is at the heart of many of these problems. When we talk about formal institutions, we're referring to the laws and regulations that control economic activity, as well as the efficiency with which they're implemented (Clegg 2019). The establishment of rigorous regulations that are supported by efficient legal and regulatory enforcement can help to foster e-commerce activities while simultaneously mitigating the dangers that are typically associated with them (OECD 2019c). However, economic activity can be hampered by the absence of strong norms and insufficient enforcement (Doh et al. 2017; Sheng et al. 2011), which can further increase the dangers involved with engaging in online commerce (Doh et al. 2017; Sheng et al. 2011). These formally established institutions are amenable to transformation as a consequence of public policy initiatives developed by the government or by agencies of the government (Clegg 2019).

The international market for e-commerce is currently facing a number of problems and threats that can have an effect on companies of any size. These problems are largely the result of inadequate enforcement and weak formal institutions. It may be possible to encourage activities related to e-commerce while simultaneously reducing the hazards that are associated with it if these issues are addressed through suitable government rules and regulations.

As the digitalization of the global economy continues to accelerate, many governments have realized the significance of developing policy frameworks to support and promote participation in e-commerce. This is demonstrated by the fact that policymakers at all levels of government, from the national level on up to regional and global levels, have begun to show a significant amount of concern regarding e-commerce. Nevertheless, in spite of this recognition, the policies regarding e-commerce can vary greatly from one nation to another. This is a reflection of the difficulties associated with adapting to the new commercial realities.

This variability can be attributed, at least in part, to the fact that it has taken the international regulatory governance system a considerable amount of time to adapt to the dynamic nature of the e-commerce landscape. This is especially true for the architecture of multilateral rules, which oversees international trade and commerce. In spite of the obstacles, policymakers are continuing their efforts to develop effective

policies for e-commerce that will encourage economic growth and support the expansion of e-commerce.

In general, e-commerce is a difficult and rapidly developing field, and policymakers are still working to develop efficient strategies for supporting and promoting participation in e-commerce. In spite of the obstacles, it is abundantly clear that policies regarding e-commerce will continue to play an essential role in the expansion and development of the economy in the years to come.

A lack of academic study on cross-border e-commerce public policy is also apparent, with the majority of the studies that have been conducted adopting a strong line against the practice. Private decision-making, on the other hand, does not drive digital development; rather, government policy plays an important part in this process (cf. Clegg 2019).

Growth Domestic Products (GDP)

In general, there are three essential characteristics that lead to long-term success in terms of business growth. Capital accumulation, which comprises new investments in land, physical equipment, and financial endowments, is one of the three variables that contribute to profitable expansion. The other two factors are population growth and technological improvement (Todaro, 1997). E-commerce, according to Davis (as stated in Hamed, 2009), is the concept of doing trade and retail operations online through the use of secure websites, which is characterized as follows: Trading is the term used to describe the exchange of goods and services between firms, organizations, and private individuals or families, or among other parties. With the use of the internet, e-commerce has made it easier to conduct international business transactions.

According to Brynjolfsson and Saunders (2009) using data from productivity studies conducted between 1995 and 2008, researchers discovered that information technology had a major impact on productivity improvements and was a primary driver of economic growth. Based on the findings of Jorgenson and Stiroh (2005), electronic commerce is a significant contributor to the improvement of labor productivity and economic efficiency while also enhancing the rate of economic growth. Higher investment in information and communication technology (ICT) is a result of the spread of e-commerce, which has resulted in greater productivity as well as economic growth

The gross domestic product (GDP) of a country is a good indication of the economic progress of that country. It is necessary to evaluate the mechanism of effect on economic growth by employing the expenditure technique of GDP accounting. Gross domestic product (GDP) according to the expenditure approach consists mostly of consumption but also includes investment as well as government purchases and net exports. GDP is defined as GDP = C + I + G + (X M) by the expenditure approach. (Liu, 2013)

E-commerce has fueled the rise of certain new businesses, such as logistics, as well as the creation of new jobs in fields such as computers and the internet, all of which have increased consumer expenditure. People have gotten increasingly interested in online purchasing as e-commerce has provided them with a more diverse selection of things to choose from (Liu, 2013).

It is recommended that cost savings in services be pursued while examining a productive growth scenario since it enables the evaluation of macroeconomic factors such as the gross domestic product (GDP), well-being, wages, and balance of trade. Developing countries that have not embraced e-commerce have suffered welfare and GDP losses, wage decreases, and worse terms of trade, among other consequences. When it comes to productivity, poor countries could catch up to affluent countries if they use e-commerce to their advantage. This would result in increased production, earnings, and overall well-being (Sumanjeet, 2011).

Technical and economic forces have prompted companies to reconsider and modify their supply chain strategies, which has resulted in a rethinking and adaptation of supply chain strategies. To remain competitive, businesses have sought improved coordination and collaboration across supply chain partners to wring out inefficiencies that may occur inside corporate transactions. Electronic marketplaces enable many of the transactions to be done outside of the company's physical location. As a result, the Internet and its applications have assisted in the process of increasing the efficiency of supply chain management (Terzi, 2011). E-commerce has had a significant impact on economic growth in recent years, and there is evidence to suggest that it will continue to have an impact in the future.

Germany’s Economy

It is essential to keep in mind that the economy of Germany is a highly advanced example of a social market economy. It is the country with the greatest

economy in Europe, the fourth-largest economy in the world in terms of GDP growth, and the fifth-largest economy overall. According to information provided by the International Monetary Fund, the nation was responsible for 28 percent of the GDP of the Eurozone in the year 2017. The International Monetary Fund, also known simply as the "IMF" (2017). Germany was and still is a founding member of both the European Union and the Eurozone. It also holds the position of being a founding member of the European Union.

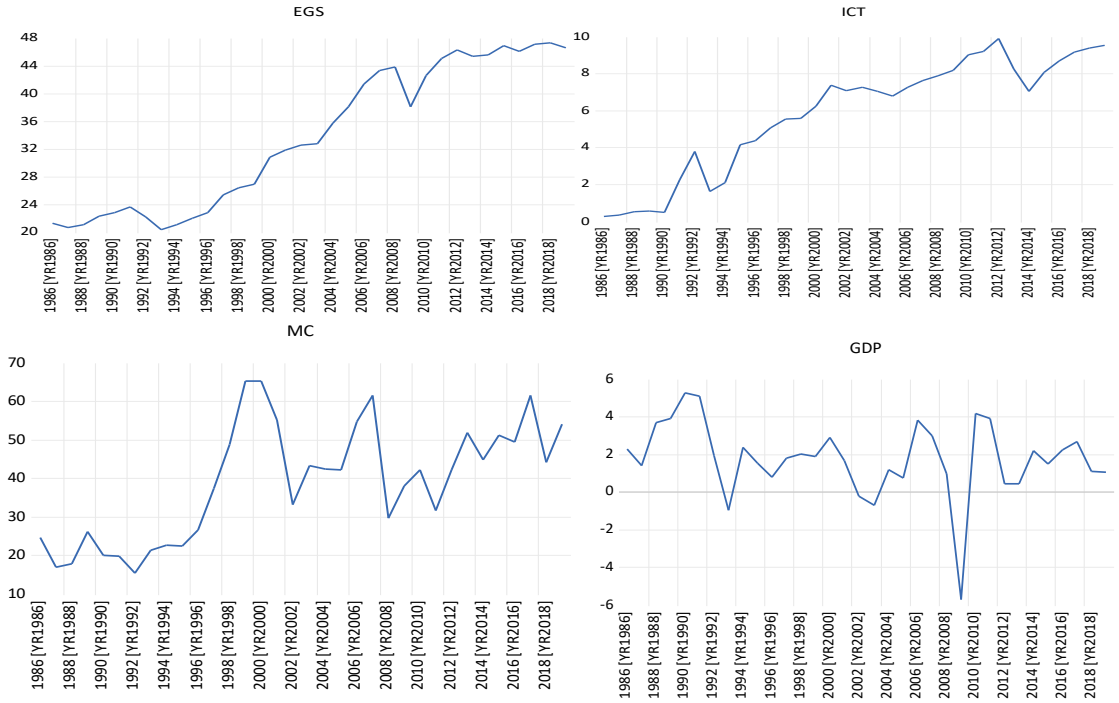
Aaron (2021) estimates that Germany's total international commerce in 2021 was worth more than 210.21 billion dollars. The value of products and services exported from Germany in 2019 was $1,810.93 billion, making it one of the largest exporting nations in the world. The contribution of the agriculture sector to the overall GDP is roughly 0.9 percent, whereas the contribution of the service sector to GDP is approximately 70 percent. The total quantity of public interest was divided into three categories: imports, exports, and investments. Vehicles, ministries, chemical goods, electronic products, electrical outfits, pharmaceuticals, transportation outfits, introduction essence, food items, rubber and plastics, and rubber and plastics are the top 10 exports for Germany. Because Germany is the economic powerhouse of Europe when it comes to manufacturing, its economy is less vulnerable to the effects of a recession than those of other European nations.

Germany is rich in a variety of natural resources, including wood, lignite, potash, and salt. Some very insignificant natural gas reserves are now being developed in the state of Lower Saxony. Uranium was mined in the Ore Mountains by the German Democratic Republic up until the time of German reunification (for further information, see SAG/SDAG Wismut).

Wind power comes in second, followed by nuclear power, gas, solar power, biomass (wood and biofuels), and hydropower. The primary source of Germany's energy is fossil fuels, which account for thirty percent of the country's total output. The Energiewende, also known as the shift to renewable energy, is being spearheaded by Germany, the first major industrialized nation to do so. Wind turbines are mostly produced in Germany, making it the country with the most market share worldwide. Germany's total electricity demand was met by renewable sources 46% of the time (as of 2019). 99 percent of all businesses in Germany are considered to be "Mittelstand," which literally translates to "small and medium-sized firms." The bulk of these businesses is run by families. There are 53 German firms that are included on the

Fortune Global 2000 list of the world's 2000 largest privately traded companies based on earnings. The top 10 German corporations on the list include Allianz, Daimler, Volkswagen, Siemens, BMW, Deutsche Telekom, and Bayer. Fortune magazine compiles the list of the top global 2000 corporations, and German companies make up 53 of the total spots. The trade fair venue that receives the most visitors worldwide is located in Germany. About two-thirds of the most significant commercial expositions that take place all over the world are held in Germany. Numerous German metropolises play host, on a consistent basis, too many international trade expositions and conferences. These include, among others, those in Hanover, Frankfurt, Cologne, Leipzig, and Düsseldorf. Others are located in other German cities.

Figure 1: Graph



Source: (Author's computation using E-view 12 software)

The Impact of E-commerce on Economy Growth

According to R.D. Anwari (2016), research on the relationship between e-commerce and economic growth has shown that increasing the presence of e-commerce in an environment that is conducive to strong growth can lead to an increase in the overall economic output of a country, which is measured by the gross domestic product (GDP) (GDP). The number of internet purchases made by consumers,

investment in research and development, the size of the government as measured by government final consumption expenditures, and health spending as measured by government final consumption expenditures are some of the factors that are examined in the study titled "The impact of e-commerce on profitable development in some countries." The study also looks at a number of other factors that may also contribute to this relationship, such as the number of countries in which profitable development is occurring. According to the findings of the study, each of these aspects has an effect on GDP per capita, which is the proportion of total GDP that can be attributed to a single member of a population. According to the findings of the research as a whole, e-commerce may have the potential to play a significant part in the process of driving economic growth and increasing prosperity for both individuals and society as a whole. In order to estimate the inflation rate in 21 European nations from 2005 to 2013, researchers from the Bucharest University of Economic Studies used panel retrogressions. Many European nations participated, including Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom.

The study looked at how the COVID-19 epidemic affects customers' propensity to shop online versus in physical locations. Between 2017 and 2019, they looked into the development of e-commerce and mobile-commerce enterprises in Romania and Germany. The analysis found that between 2017 and 2019, mobile e-commerce sales in Romania increased by threefold and in Germany by twofold, both significantly outpacing the overall growth rate of both countries. The researchers also discovered a favorable relationship between GDP and mobile e-commerce purchases. With many people confined to their houses due to the COVID-19 epidemic, online shopping experienced rapid expansion as people were forced to rely on it to meet their basic needs. Learn how the pandemic has affected European consumers' shopping habits and the expansion of e-commerce enterprises with this in-depth study.

"The Impact of E-Commerce on Global Business and New Openings," (Nair K, 2017), argues that electronic commerce will contribute to the unknown growth and enhancement of global business by encouraging transnational trade between countries and that it will be an essential element of a country's contribution to GDP by tearing down barriers between nations. The author also asserts that e-commerce will contribute to the unanticipated growth and enhancement of global business by boosting

transnational trade between nations. He also argues that e-commerce will contribute to the unprecedented growth and improvement of global business by encouraging international trade between countries. As a result of these changes, the knowledge and abilities of many segments of society will improve, resulting in technological advancement, increased sales, and improved employment opportunities, among other benefits. In the traditional economy, it is expected that e-commerce and digital business will lead to some job losses; however, they will also lead to the creation of new job opportunities in the information and communication technology industry.

E-commerce payment method in Germany

The "classic" payment methods, such as purchase on account or direct debit, prepayment or cash on delivery, as well as a credit card, are all available in Germany, as are numerous other payment methods that have been specifically designed for online trading in addition to the "classic" methods. Among the services that can be mentioned here are Klarna, PayPal, Wirecard, Paydirekt, Sofortüberweisung, and so forth. In recent years, the proportion of sales processed through "newer" payment methods has been steadily increasing. (According to STATISTA 2018)

Purchase on account is the most popular payment method used by merchants in Germany when conducting business online (93.3 percent). Prepayment and direct debit are the second and third most popular methods of payment, with 64.4 percent and 48.9 percent, respectively. This is followed by the payment methods credit card (46.7 percent), cash payment (44.4 percent), and PayPal (44.4 percent), all of which rank in the top three. From the perspective of the customer, 70 percent use purchase on account, followed by 67 percent who use online payment service providers such as PayPal or Amazon Payments. A closer look at the range of payment options available reveals that they are not always precisely tailored to the needs of consumers. After all, direct debit accounts for 47 percent of payments, credit cards account for 43 percent, and direct bank transfers account for 28 percent. As reported by the ECC payment study, the average number of payment methods offered by German online merchants is six. Invoice payment, direct debit payment, PayPal payment, and credit card payment are all options that should be made available to customers. (According to STATISTA 2018)

E-commerce in Germany

According to (Bevh, 2020) e-commerce in Germany was valued at EUR 83.3 billion in 2020. This is a 14.6 percent gain over the previous year, according to E-commerce News Europe. The coronavirus outbreak and subsequent lockdowns were to blame for the rise. In 2019, Germany's e-commerce market was worth EUR 72.6 billion. The new figures come from the (Bevh, 2020) e-commerce association. According to the firm, one out of every eight euros spent on goods by households in 2020 was spent online. Even though supermarkets, drugstores, and pharmacies remained open in Germany, groceries, and pharmaceutical products had the most rise in online retail. Furthermore, one out of every three internet customers in 2020 was beyond the age of 60, according to reports. Even though this age group accounted for less than a quarter of e-co sales in Germany in 2019, four out of ten online buyers now order multiple times per week.

According to Koptyug (2022), e-commerce is a critical component of the German retail environment and must be supported. B2C e-commerce is a rapidly expanding industry that continues to grow at an exponential rate year after year. While B2C online income in Germany increased from one to three million euros at the beginning of the twenty-first century, the figure is reached 73 billion euros in 2020. Revenue is expected to increase in the coming years, according to forecasting models. The largest online stores in Germany account for over 40% of total German e-commerce income, according to Statista (2018).

Shopping online is a popular pastime among German customers, as evidenced by recent statistics. When it comes to online sales revenue, Amazon.de takes the top spot among German online retailers. Amazon.de is followed by the fashion, furniture, and consumer electronics retailer otto.de. The third and last place goes to the fashion shop zalando.de. Customers in Germany will return 315 million packages in 2020 after receiving them as a result of online orders.

With the proliferation of mobile devices on the market and the following widespread adoption of these devices, as well as the expansion of Wifi connectivity in public places, online shopping is no longer limited to the comfort of one's own home. In Germany, for example, when consumers use their smartphones to shop, the vast majority of them choose to purchase apparel or shoes, books, as well as train or plane tickets. Online bank transfers were the most popular mode of payment in Germany for online purchases.

When broken down by category, projections for revenue growth in German e-commerce are optimistic. This is especially true for fashion products, as well as electronics and the media business in general.

Direct and Indirect Impact of E-commerce on the German economy

According to Bevh (2020), e-commerce has contributed immensely to the German economy in a variety of ways, both direct and indirect. The direct contribution is related to the products and services that e-commerce enterprises provide. As a result, revenues from e-commerce businesses are included in the direct revenue contribution. It is the value-added generated within the same e-commerce companies that are included in the direct GDP contribution, which is paid out in wage payments and profits.

The indirect contribution of e-commerce to the economy refers to the economic activity that is generated as a result of the supply chains of e-commerce businesses. This includes the goods and services that e-commerce companies acquire from their suppliers, who in turn purchase goods and services from their own suppliers, and so on. It is important to note that this indirect contribution does not include goods that are purchased by e-commerce companies solely for the purpose of reselling them directly to customers, such as fashion items.

The direct income generated by e-commerce enterprises is €468 billion, and the GDP generated by e-commerce is €65 billion. This means that e-commerce businesses directly contribute €468 billion in income to the economy, and the overall economic activity generated by e-commerce is €65 billion. The indirect contribution, which is generated along the supply chains of e-commerce companies, is not included in these figures.

In practice, this means that German e-commerce enterprises earned €468 billion in revenues and contributed €65 billion to GDP through salary payments and profits, equating to around 7.4 percent of total output and 1.9 percent of GDP. This economic activity, according to Bevh (2020), estimates, supports around 768,700 jobs in the e-commerce sector, which corresponds to 1.7 percent of total German employment. A significant indirect economic contribution is also made: by purchasing goods and services from German suppliers, e-commerce enterprises stimulate economic activity in other companies, which then stimulates economic activity in the companies further down their supply chain, and so forth. These effects ripple across the entire supply

chain, generating around €286 billion in revenue and contributing approximately €35 billion to the GDP in total. We estimate that the economic activity created by e-commerce in the industries along its supply chain supports approximately 487,700 jobs, or 1.1 percent of total German employment, in the industries along its supply chain.

E-commerce and Information Communication Technology (ICT)

According to Gabriel, J.M.O., Ogbuigwe, T.D., and Ahiauzu, L.U (2016), advancements in information and communication technologies, as well as the availability of Internet-based services, have completely transformed the way and manner in which business transactions are conducted, paving the way for the emergence of new and more diverse styles of conducting business operations known as online shopping. E-commerce, of which online shopping is a subset, has developed into a large industry in Germany during the past few years. Customers that utilize online platforms to order things from shops or collect them from those retailers are engaging in this sort of shopping. Research conducted by Ahmed and Richard (2015) has demonstrated that the implementation of e-commerce and successful utilization of the internet by organizations can result in considerable increases in both growth and profitability. Electronic commerce, often known as online stores or virtual enterprises, has the ability to link individuals all over the world because to the internet's widespread accessibility. It is widely held that the prompt delivery of goods purchased from online businesses and the ability to place repeat orders can have a beneficial effect on the economies of industrialized nations like Germany.

According to his findings, the Internet and the World Wide Web (WWW), or the web, as it is more commonly known, are two products of technological inventions that have enabled numerous associations to conduct business, exchange information, and unite with others across geographical boundaries and calculating platforms that are connected in a network of computers. The Internet and the World Wide Web (WWW), or the web, as it is more commonly known, are two products of technological inventions that have enabled numerous associations to conduct business, exchange information, and unit The Internet and its associated technologies are becoming less and less relevant as a critical instrument for ensuring the long-term viability, development, and success of businesses in today's competitive business environment. To underline the relevance of electronic commerce in today's business environment is

unavoidable due to the fact that it has altered both the styles and the styles in which commercial transactions are carried out in the present day. The authors of the study discovered that electronic commerce had a favorable impact on practically every type of business after conducting comprehensive research. Anthony, I., Onwumere, J.U.J., and Obiamaka, P.E. (2014). In part because of their position in an e-commerce request galleria, online bookies and music stores, as well as other online businesses like Amazon, Barnes & Noble, Borders, and e-Bay, to mention a few, were able to achieve enormous growth, which contributed to economic growth in the process.

Export and Goods and Services

Dukuly and Huang (2020) conducted a study for the period 2000-2019 based on secondary data published by the World Bank Development Pointers (WBDI), which was gathered from a variety of sources, including the World Bank Development Pointers (WBDI). Economic indicators/variables that have an impact on profitable development, such as exports, foreign direct investment (FDI), population growth, significance, gross fixed capital formation (GFCF), and gross domestic product (GDP), were used to estimate Liberia's trade affairs (GDP). A time-series retrogression model based on the Ordinary Smallest Places (OLS) as well as the Stock and Wilson (1988) approach was employed in this investigation (GDP) As a result of the Ordinary Least Places test for retrogression, the variables exports, foreign direct investment, population, and profitable development in Liberia as well as the variables in the United States are found to have a direct association and a straight-line link in Liberia. It is said that significances have an adverse effect on Liberia's economy and are linked to the country's GDP growth. Given the fact that the impact on exports was positive and statistically significant. When it comes to fixed benefits, exporting provides access to larger outside markets and, as a result, the potential to take advantage of volume discounts and other economies of scale. Dynamic advantages, such as increased efficiency as a result of knowledge and technology spillovers from past exporting experience, can also be realized. Exporting has an impact on economic efficiency where resources are allocated, the creation of jobs, and the easing of foreign exchange limitations (Bbaale and Mutenyo 2011).

This premise is reinforced by a significant number of strong theoretical arguments that have been provided in recent literature to support the idea that exporting activities and total economic growth are linked. A country's ability to export

on the one hand opens up the country's market to more diverse foreign demand, which in turn improves domestic output and, as a result, economic growth. But on the other hand, exporting can be a drain on a country's resources. While exporting allows a country to have access to greater global demand, it also improves domestic output, which in turn leads to an increase in economic growth. When it comes to imports, on the other hand, a country's ability to capitalize on broader external demand prospects is restricted. First and foremost, it is commonly acknowledged that small domestic markets cannot sustain their growth indefinitely and that any positive economic shock that results in domestic market expansion is more likely to be followed by a rapid contraction.

Because demand-side growth restrictions are not always present in large international markets, the use of economies of scale to benefit from economies of scale is possible in large international markets (Bbaale and Mutenyo, 2011).

For the period 1970 to 2017, Bakari, Fakraoui, and Tib (2019) used the VECM approach to study the relationship between domestic investment and exports, as well as their significance and profitable growth in the Brazilian manufacturing sector. Their logical investigations have indicated that, in the near run, the most important drivers of profitable development are significance, exports, and domestic spending. The profitable substance also serves as a source of exports, and domestic expenditure is calculated by deducting exports, significances, and general profitable effort from the total domestic expenditure. While their evaluations have shown that domestic consumption and exports are conducive to profitable development over the long term, this is a source of hope for the future. It has also been demonstrated that significances are detrimental to profitable development. Profitable growth and significance, according to the research, had a beneficial impact on foreign direct investment in the country. Imports are having a detrimental impact on consumer spending in the United States of America. In conclusion, it is critical to highlight that the impact of economic growth, exports, and domestic investment on imports is little and that the same is true for the impact of economic growth on exports, domestic investment, and imports.

A vector autoregressive (VAR) model was developed to investigate the relationship between exports and economic growth. Indonesia is getting increasingly popular as a result of its rapid growth.

Exports and economic growth in the country's economy, according to the findings of the GIRF investigation, are both critical to Indonesian economic growth. We cannot

stress the significance of exporting. There is no way to overstate the magnitude of what has happened here. Exaggeration of the importance of exporting is simply not conceivable. As has been demonstrated in past research, there is a bidirectional causal relationship between exports of commodities and services and economic growth. On the one hand, they stimulate economic growth while on the other, they inhibit it. It will have a positive impact on long-term growth, but, as previously noted, it will have a minimal impact on growth in the near term.

E-commerce Business Models

According to Laudon and Traver (2018) and the OECD (2019c), the use of the internet for commercial transactions can result in a wide variety of partnerships including customers, companies, and governmental organizations. Business-to-business (B2B) e-commerce, in which one organization sells items or services to another via the use of the internet, is the most popular type of electronic commerce in terms of the financial transactions that take place over the internet. E-commerce between businesses, often known as B2B e-commerce, is the act of making products and services available online. It includes service support, product communications (promotion and advertising), product and service procurement, and electronic supply chain management, among other things (Gregory et al. 2017).

Business-to-Consumer (B2C) e-commerce is a type of e-commerce that has garnered a great deal of attention in the literature and is becoming increasingly popular. Business models in B2C e-commerce such as those used by Amazon and Alibaba are the most well-known in the industry. While business-to-business transactions have long dominated the e-commerce market, business-to-consumer purchases are rapidly expanding (OECD 2019c). Consumer-to-consumer (C2C) e-commerce is significant since it allows people to directly trade online. Online marketplaces like eBay allow users to sell their goods and services to other consumers, enabling this type of e-commerce. On-demand service companies like Airbnb and Uber enable this form of e-commerce by connecting users to rent or provide transportation.

C2C e-commerce has many benefits. First, it makes purchasing and selling easier. Shoppers and sellers can buy and sell online at their convenience. Since consumers can connect with other consumers worldwide, C2C e-commerce offers a wide range of goods and services.

C2C e-commerce also helps small firms and entrepreneurs sell their products and services without having to open a storefront or pay for advertising. C2C e-commerce also creates niche marketplaces and lets consumers locate unique items and services.
B2G e-commerce includes online auctions, tenders, and purchases. Online procurement lets governments and businesses buy goods and services from suppliers using digital platforms.

E-commerce participation has expanded beyond B2G. M-commerce is one. E-commerce employing smartphones, laptops, and tablets is a subset of this. Mobile shopping is making this form of e-commerce more prevalent.
E-commerce is constantly changing. To compete in the digital economy, firms and governments must keep up with the latest trends and technology in B2G, m-commerce, and other e-commerce. Aside from that, social e-commerce, which allows for the facilitation of e-commerce through the use of social networks and online social connections, has gained in popularity in recent years. Facebook, the most widely used social networking site, is a well-known illustration of this (Laudon and Traver 2018). Digital technology and methods created expressly to receive or submit orders to businesses are common features of the various kinds of e-commerce.

E-commerce Creation Jobs in Germany

According to Bevh (2018), e-commerce firms provide a diverse range of services, and the employment opportunities available within the industry are as diverse, however, a disproportionately high proportion of new logistics/warehousing and information technology-related positions have been created. Bevh (2018) discovered that approximately 75% of the jobs in a sample of ten German e-commerce companies, all of which are primarily involved in the fashion industry, fall into the categories of inventory, delivery management, and logistics, with only 15% of jobs falling into the category of information technology. These percentages will vary depending on the extent to which outsourcing is utilized, but they will often account for a major fraction of the total revenues when the downstream value chain is taken into consideration. Employment prospects in e-commerce range from unskilled or semi-skilled roles to own training and advanced training degrees, as well as general and specific university degrees in a variety of subjects. According to a 2017 poll done in Germany, earnings in e-commerce are frequently significantly more than the minimum wage. Workers in the unpaid labor force, such as customer service

representatives, are typically paid between the minimum wage and +75 percent, whereas skilled personnel, such as procurement personnel, are paid significantly more than the minimum wage, typically earning between +35 percent and +21 percent, with information technology developers earning the highest salaries in the industry (Bevh 2018). The growth of e-commerce has had a significant impact on the creation of new jobs, which has had a significant influence on the growth of the German economy.

E-commerce Public Policy

In the United States, government policies are put into place to define particular goals and make use of a wide variety of methods and instruments in order to accomplish these goals. This procedure is always undergoing change and, most of the time, it is the consequence of a chain of sequential events that are linked together to produce the intended result. One example of this kind of process is the formation of public policy. In addition, the term "international business policy" refers to the activities that are taken by governments in order to actively influence the decisions that are made and the actions that are performed by corporations that operate on a worldwide scale. Howlett and Cashore 2020, Howlett and Cashore 2014, Lundan 2018, Clegg 2019)

Through public policy decisions and laws, governments have the option of intervening to change or maintain aspects of the current system (Howlett and Cashore 2014; Birkland 2019). For instance, governments might create and implement laws that give more weight to the development of one industry over another (Georgallis et al. 2021). In the framework of electronic commerce, governments make it possible for funds to be generated, ICT infrastructure to be developed, and ICT services to be made available to the public at cheap cost and with a high degree of reliability (UNCTAD 2019). This is noteworthy because ICT is a key enabler and driver of e-commerce in the digital economy (OECD/WTO, 2017). Governments can create, execute, and disseminate a legal and regulatory framework that is conducive to e-commerce as part of a public policy initiative to promote such transactions. Customer protection measures in such frameworks can include, for instance, the right of withdrawal (procedures for returning products) and privacy and data protection policies that include protections for the use of personal information (the right to be forgotten) (OECD/WTO, 2017).

According to the OECD/WTO in 2017, these measures can help to build a suitable legal and regulatory framework for e-commerce, which can decrease transaction risks and promote transparency (OECD 2019c). Governments throughout the world are paying more attention to standardizing e-commerce rules and regulations due to the importance of e-commerce in today's economy and the role of government policy in supporting e-commerce. More than sixty percent of regional trade agreements that entered into force between 2014 and 2016 featured an e-commerce component. (Wolfe 2019). It also serves as a reminder of how far we've come on this front over the past two decades, when such regulations were either just being drafted or nonexistent (Desai et al. 2003)

An empirical analysis revealed that public policy plays a significant role in the expansion of the e-commerce industry. For instance, Scupola's (2003) research in southern Italy found that government policy significantly influenced SMEs' embrace of e-commerce (SMEs). According to Cui et al. (2006), government policies may affect businesses' decisions to enter the Chinese e-business market. Data security, insufficient legal protections, and unsupportive business legislation were identified as regulatory impediments that firms faced when considering embracing e-commerce in a cross-national study done by Kraemer and colleagues (2006).

Perceived Barriers to Cross-border E-commerce in the EU

E-commerce, as a new preamble of online merchandising technology in the business, benefits both consumers and merchandisers, according to the preamble of the industry. However, when customers and merchants are confronted with new impediments that did not exist or were less relevant in the offline purchasing environment, it results in the introduction of new trade barriers. Early in 2015, the European Commission commissioned two studies in order to determine the impact of these particular barriers to internet shopping. One of the studies focused on consumer barriers, and the other study focused on trafficker obstacles. Both studies were conducted in order to determine the impact of these specific obstacles. The European Commission dissected the findings of both checks and came up with a final conclusion. According to descriptive statistics, the results of these checks have been published (Eurobarometer nr 413, 2015; GfK report, 2015), and some of the conclusions have been reported in the Digital Single Request strategy paper (Digital Single Request Strategy Paper, 2015), and the results of these checks have been published in the

descriptive statistics (European Commission, 2015). Cardona et al. (2015) and Duch-Brown & Martens (2015), working independently, provide a more in-depth econometric analysis of the check findings.

The information in the preceding two reports serves as a foundation for the description in this part. In this segment, guests and merchandisers are shown a list of implicit obstacles, and they are asked if this has an impact on their cross-border purchases and transactions. Aside from that, they provide information on international commerce that involve customers and merchants from other countries. The combination of these two sets of variables, which are both at the expansive periphery (the number of consumers and retailers who engage in cross-border deals) and the ferocious periphery (the number of consumers and retailers who engage in cross-border deals), estimates the factual quantitative impact of perceived walls on transnational purchases and deals are made, according to Cardona et al. (2015) and Duch-Brown & Martens (the volume of cross-border purchases and deals). In the absence of removal of the impediments described in the checks, such as by abandoning EU-wide consumer contract law norms such as those proposed by the European Commission in its Digital Single Request strategy, these figures can be interpreted as a forecasted increase in cross-border trade as a result of a reduction in the impediments described in the reviews.

Market Capitalization

E-commerce was anticipated to be the most popular non-store distribution channel for retailers in Germany in the year 2020 by Euromonitor International (2021), with non-store retailer agreements totaling $84.3 billion in the year 2020. (Euromonitor International, 2021) (90.6 percent). According to the report, the value of packaged food deals purchased online will reach US$1.0 billion in 2020, growing at a compound annual growth rate (CAGR) of 19.3 percent and increasing in value by 40.9 percent from 2019 to 2020. This is in comparison to store-based deals, which grew at a compound annual growth rate (CAGR) of 2.7 percent from 2019 to 2020.

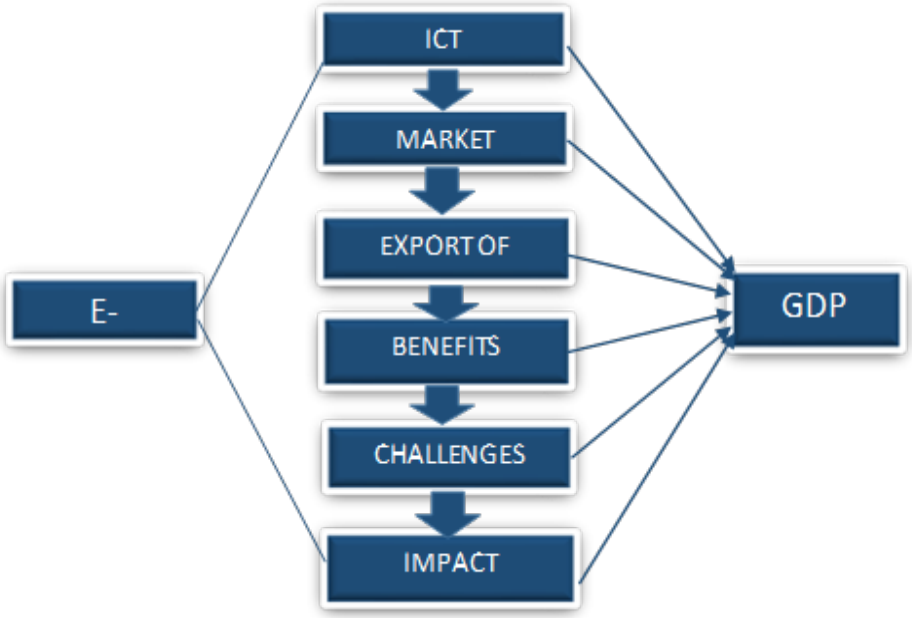
A study conducted by the (e-food bean, 2020) found that the top reasons for ordering food online in Germany were convenience, a smaller product range, time savings, decreased inflexibility, and the fact that there was "no other choice. The retailing assiduity in Germany's far-flung terrain accounted for the massive maturity of total value-added. Top online generalists Amazon and Otto benefited the most from the drastic move towards e-commerce, as evidenced by an increase in merchandisers

employing this online commerce as a complete business to vend their particulars during the 2020 epidemic. As reported by the German Payments Association, remote e-commerce payments in the country's food service industry experienced the most significant rise, with online transactions increasing by 395 percent from US$1.5 billion in 2019 to US$7.6 billion in 2020. In 2020, purchases made through mobile web devices will account for 54.9 percent of all e-commerce food service transactions, with a total transaction value of US$4.2 billion the year 2021, the number of internet druggies is expected to grow at a compound annual growth rate (CAGR) of 1.1 percent, reaching 75.4 million individuals in 2025, up from 78.8 million mobile internet guests in 2020. With 92 percent of German households having an internet connection and 91 percent having broadband internet access, the country ranks first in the world in terms of internet connectivity. The following probability of having a digital device in one's possession in 2020 is based on the assumption that one's home has one. Specifically, smartphones (84.6 percent), laptops (77.4 percent), and tablets (59.2 percent) all beat their respective contemporaries in terms of mobile phones (96.7 percent) and specific computers (59.2 percent) (92.4 percent)

Conceptual framework

Based on the literature review, the abstract frame pictured below was created as a result of the process. E-commerce contributes to the improvement or development of a variety of elements, with improved performance in these aspects having a positive impact on profitable economic growth such as GDP, the impact of e-commerce on economic growth, and the benefits and challenges of e-commerce. For example, e-commerce minimizes the cost of transactional conditioning, which is beneficial. This cost-cutting measure adds to enhanced profitable growth as a result of its implementation.

Figure 2: Conceptual Framework



(Source: Source: Author's computation)

According to the literature studies cited above, there is a compelling argument in favor of the impact of E-commerce on economic growth in Germany, and there has been little equivalent research made in this country as of the date of writing. E-commerce has had a big and positive impact on the German economy in recent years, and with the emergence of Covid-19, it has made a significant contribution to the country's overall profitable economic growth.

Summary of Literature Review

As per the results of the earlier literature review, which can be found here, the rise of e-commerce has had a considerable influence on the growth of the German economy. This is especially true when it comes to the benefits that e-commerce provides to a company and how it assists in the reduction of many expenditures for many companies and consumers. All of these benefits are attributable to the export and import of goods and services, which in turn contribute to economic growth. E-commerce helps reduce many expenditures for many companies and consumers. However, the development of legislation to address these concerns is also a key priority for governments. The literature review analysis indicates that some difficulties need to be addressed, regarding data protection and privacy.

Additionally, the economic influence that e-commerce has had on the German economy is highlighted. According to Bevh (2021), productivity in Germany increased by 2-3 percent last year.

Through the entirety of the value chain, e-commerce income in Germany contributed a total of €468 billion to the country's economy in 2019. When compared to revenues made through consumer transactions, those gained through business-to-business transactions are 15 percent higher. In 2019, e-commerce was presented across the entire Germany's value chain (corresponding to 2.8 percent of total German employment). In business-to-consumer interactions, there were 768,700 people working full-time jobs created by e-commerce. By the year 2020, there was 39 percent of new businesses were exclusively based on digital platforms for their business operations in Germany. According to Ecommerce News Europe, the findings demonstrate a 14.6% rise in comparison to the same time period in the previous year. According to the findings of the literature review and the conceptual framework that was proposed for this study, electronic commerce has a substantial impact on economic growth in both developed and developing countries. The purpose of this study was to investigate this relationship.

CHAPTER III
DATA AND METHODOLOGY

Introduction

$Y_t = Y_{t-1} + \epsilon_t$……..4.1.0

The Epsilon term/variant, reflecting a stationary random disturbance component, should be highlighted. As the deviation or error from the expected value, this term is vital to comprehending the series y forecast value. Without this component, the projected value would be a flawless prediction. As seen in the previous equation, the projected value for the series y is constant across time regardless of the number of observations. The forecast value is independent of the amount of observations or data points utilized to produce it.

The previous equation shows that this chapter describes the different methods, procedures, and strategies used to obtain the data for this study. Data collection, cleaning, and analysis are included. This section also discusses the statistical methods utilized to analyze the research data. Descriptive, inferential, and regression statistics are used. These methods helped researchers comprehend data and develop reliable findings.

Data types and sources

In order to reach its ultimate findings, most research endeavors rely on two forms of data: theoretical knowledge and statistical-econometric analysis, which is frequently employed to obtain those conclusions and produce those significant findings. In this research, the author followed the same path as the author of a previous study. When seeking numerical data for a wide range of components and variables, it is essential to consider the World Bank Data collection. Between 1986 and 2019, a total of 33 years was studied, with data being collected on an annual basis throughout the period. When investigating econometric variables such as GDP or market capitalization of publicly-traded domestic enterprises, it is recommended that annual data be utilized wherever available to maximize the reliability and accuracy of the estimations.

Descriptive Statistic

From table 1 below, the mean for GDP, EGS, ICT, and MC are 33.72513, 1.776883, 5.820953, and 38.92713 respectively while the median value for GDP, EGS, ICT, and MC are 32.70215, 1.839711, 7.042873 and 42.11631 respectively.

The skewness for GDP, EGS, ICT, and MC are 0.029977, -1.293998, -0.605550, and 0.077286 respectively which means that the data for all the variables for GDP and MC are positively skewed toward the right-tail, while EGS and ICT are negatively skewed toward the left-tail. The result of the kurtosis statistics reveals that the kurtosis for GDP, ICT, and MC are 1.342088, 2.024693, and 1.843921 respectively, which makes them platykurtic because their kurtosis value is less than 3, because of their greater-than-three-percentile kurtosis (e.g., 7.049709), EGS is considered leptokurtic

Descriptive Statistic

	GDP	EGS	ICT	MC
Mean	33.72513	1.776883	5.820953	38.92713
Median	32.70215	1.839711	7.042873	42.11631
Maximum	47.30105	5.255006	9.895416	65.37046
Minimum	20.31344	-5.693836	0.289813	15.42018
Std. Dev	10.35965	2.00355	3.111896	15.12444
Skewness	0.029977	-1.293998	-0.605550	0.077286
Kurtosis	1.342088	7.049709	2.024693	1.843921
Observation	33	33	33	33

Source: (Author's computation using E-view 12 software)

Variables and their Measurement

All of the information for this study's dependent and independent variables was taken from the World Bank database, which may be accessed online. In contrast, only a tiny portion of variables as input in an unusable format, despite the fact that the vast majority of variables were provided in formats that were suitable for use in meeting the study objectives. To calculate the economic impact of e-commerce on Germany's economy, we used Gross Domestic Product as a dependent variable and market capitalizations of publicly traded German companies, exports of goods and services

from Germany, and exports of ICT services from the Federal Republic of Germany as independent variables. The following factors were taken into consideration in this study:

GDP Growth - The rate of rising gross domestic product (GDP) measures how quickly the economy is growing or contracting. GDP has four components, with personal consumption expenditure being the most important of these components. In each particular period, GDP growth represents the economy's position within the economic cycle. Because real GDP is adjusted for inflation, it is necessary to use it when comparing one year to another.

Market capitalization - (also known as market value) of publicly traded domestic companies can be calculated by multiplying the share price by the total number of shares that are currently in circulation (including the various classes of shares). Participation in the competition is not permitted for entities such as investment funds, unit trusts, or corporations whose primary commercial objective is to hold shares of other publicly traded companies.

Exports of goods and services – Products that leave the country's statistical region – also known as merchandise trade – are known as exports. Generally speaking, in the general trade system, the statistical territory of a country is the same as the economic region of the country, and vice versa. Specifically, the statistical territory is defined as only a certain section of the economic territory, specifically that fraction of the economic territory that overlaps with the free circulation region for commodities in the special trade system. The free circulation area is a portion of a country's economic region within which commodities may be disposed of without being subject to Customs regulations.

Information and communications technology - (ICT), is an expression that refers to the technology that is utilized in the administration of communications activities such as telecommunications, broadcast media, intelligent building management systems, multimedia processing, and transmission systems, and internet tracking and management functions.

Stationary

According to Gujarati and Porter (2009), for a series to be considered stable in form, the values of its mean and autocorrelation must remain constant regardless of changes in the total amount of time that has passed since the first point in the series.

This is true despite the fact that the total amount of time that has passed since the first point in the series can change. This is a crucial component in being able to do an analysis of the series. It is possible to draw the conclusion that the series is not stationary based on the research, provided that the set of series that is being considered is not stationary to begin with. According to what Gujarati and Porter (2009) have to say about the topic, it is possible to deduce that a series is stationary if the mean, covariance, variance, and other features of the series do not change over the course of time. In other words, the series has not changed in any way as a result of the passage of time. The non-stationary nature of the series will be preserved no matter what decision is made about the implementation of a repair. In the field of computer science, terminology such as "unit root" and "non-stationary" are frequently interchanged with one another and other phrases as well. When making predictions based on a time series, it is customarily done so with the assumption that the time series in question has remained stationary. In every given temporal sequence, this is always the case. The stationarity of the variables was determined in this thesis using the Augmented Dickey-Fuller and Philips-Perron tests, both of which were enhanced. It was decided to update both of these tests from their prior versions. An initial criterion of the significance of 5 percent is recommended for use in statistical analysis as a starting point for further investigation. We obtain an example of a non-stationary series if we take the following equation and apply it to the setting of a random walk scenario:

The variability of the series y becomes more pronounced over time. Random walks are a type of difference stationary series, which indicates that the differences at the beginning of a random walk are also stationary.

$yt = c + \delta t + a\, yt - 1 + e(t)$ …….. (eq1)

When a different stationary series is integrated at a specific time and the sign I is used to signifying this integration, the symbol I (d) indicates that this integration has taken place (d). The ratio of unit roots that can be accepted in a series can be used to express the order of integration for a series. Alternatively, the order of integration can be expressed as the number of distinct operational processes that need to be carried out in order to bring a series to a point of equilibrium. Given that there is only one unit root in the random walk mentioned above, the series is referred to as the I (1) series. This is because there is only one unit root in the random walk stated above. On the other hand, we are able to draw the conclusion that a series is I when it is in a stationary state (0). Due to the fact that the variables in question are integrated, conventional methods

of drawing inference cannot be used when working with regressions that involve an integrated dependent variable or integrated repressors. These are distinguished by the following characteristics: To guarantee that the results of the regression are reliable, it is critical to determine if a series is stationary before utilizing it in a regression model. The unit root test is the most often used technique for determining whether or not a series is stationary, and it is also the most accurate.

One definition of a stationarity distributed probability states that it is a probability in which the mean and variance of the data do not change over the course of the study. Jeffrey M. Wooldridge's study was published in 2013. When either one of these variables undergoes a shift, there is evidence to suggest that a unit root exists somewhere within the data set that is being investigated. Comparisons can be made between a stationary series and a non-stationary series since attempting a non-stationary series will lead to the production of erroneous and incorrect data. A stationary series, on the other hand, remains consistent over time.

ARDL

The ordinary least square (OLS) approach is utilized in the autoregressive distributed lag (ARDL) model, which is a sort of model that may be applied to both non-stationary and time series with variable levels of integration. ARDL stands for autoregressive distributed lag model. This model can be applied to time series data that is either stationary or non-stationary in nature.

The general equations for the autoregressive distributed lag model are seen below;

$$y_t = \alpha_0 + \alpha_1 t + {}_{i=j}\sum^{p} \emptyset_i y_{t-I} + \beta^{*1} x_t + \sum_{i=0}^{p} \beta^{i}{}_t + \Delta X_{t-1} + \mu_t \quad (1)$$

$$\Delta X_t = P_1 \Delta X_{t-1} + P_2 \Delta X_{t-2} + \ldots + P_s \Delta X_{t-s} + \varepsilon_{it} \quad (2)$$

In this model, the variables that are represented by xt are not co-integrated with one another and are instead independent of one another. The means of the disturbances represented by t and t are both zero, and their variances and covariances are both constant. The coefficient matrices that are represented by P1 are k by k, and they are responsible for maintaining the stability of the vector autoregressive process in Xt-1. In addition to this, it is presumed that the roots of _(i=0)pi lie outside of the unit circle and that there is a relationship between yt and xt that is both unique and stable over the long run.

The equation used in this research work is seen below as follows;

$$In(GDP) = \beta o + \beta_1 In(ICT) + \beta_2 In(EGS) + \beta_3 In(MC) + e_t$$

Where the coefficient, βo, β_1, $\beta_3$are to be determined and, Ɛt is the error term. In this equation, GDP is considered the dependent variable which is equal to ICT with the coefficient of $\beta o + \beta_1 In$ + EGS with the coefficient of $\beta_2 In$ + MC with the coefficient of $\beta_3 In + e_t$, which is the error of the term.

The advantage of using the ARDL test is that it is more resilient and performs better when dealing with a limited sample size of data, which is appropriate for the purposes of this study. When it comes to Germany, the sample size is 33 years. In this study, annual time series data on ICT, EGS, MC, and GDP in Germany were used to compile the results.

The Augmented Dickey-Fuller (ADF)

According to Dickey and Fuller (1979), the authors developed and constructed a computer program to test their theory by determining whether or not a variable is subject to an a priori random walk and whether or not it has a unit root. This was done in order to determine whether or not the authors' hypothesis was correct. Using the outcomes of the initial Dickey-Fuller experiment as a point of departure, Hamilton (1994) proposes four unique situations as a way to demonstrate the applicability and significance of the expanded Dickey-Fuller test. These hypothetical circumstances are based on the results of the initial Dickey-Fuller experiment. The assumption that there is only one unit root of the variable in issue at each and every point in the distribution is what is known as the null hypothesis, which was put forward by. This assumption is made regardless of the circumstances of the situation.

The inclusion or exclusion of a drift factor in the null hypothesis is one of the most important distinctions that can be made between the two methodologies. In addition, the second methodology integrates a constant component as well as a temporal trend into the regression that is used to produce the test statistic. Because of this, the second methodology is considered to be a more advanced approach. The second methodology takes into account both of these different aspects of the situation. The primary difference between this test and the Dickey-Fuller test is that the Dickey-Fuller test was conducted with the model serving as the basis for the analysis, whereas the current test uses the model as the basis for the analysis. Both of these examinations are relatively comparable to one another in spite of this variance.

$\Delta yt=\alpha + \beta t+ \gamma yt-1+ \delta 1\Delta yt-1+\cdots+\delta p-1\Delta yt-p+1 + e_t$

It is feasible to have higher-order autoregressive processes while making use of the ADF formulation. This is due to the fact that the ADF formulation incorporates delays of the order p. As a result of this, it is essential to ascertain the length of time that the lag p will continue to exist until the test can be applied to the data in a manner that is both accurate and efficient.

Philip-Perron Test

The Phillips–Perron test is a method of statistical analysis that is named after Peter C. B. Phillips and Pierre-Perron, two statisticians who worked in the field of statistical analysis during the early 1900s. The test is also known as the test for the unit root. Testing the "null hypothesis" that a time series is integrated at the first order of integration is one of the tasks that fall under the purview of time series analysis. The Dickey-Fuller test, on the other hand, examines the alternative in a different way but also tests the null hypothesis. Both of these tests are used to determine whether or not the null hypothesis is true.

$y_t = c + \delta t + a\, y_{t-1} + e(t)$

According to the null hypothesis, the only value that may possibly be assigned to an is 1. The purpose of the test, which may be utilized with a wide range of different growth patterns, is to get rid of any growth features by establishing the drift and deterministic trend coefficients (c) to be equal to zero. In order to take into account the serial correlations that are present over the entirety of the study period, the Augmented Dickey-Fuller statistics are utilized. In addition to that, during the entirety of the innovation process, these statistics are used to account for serial correlations (t).

ARDL Bound Test

When it is unclear whether the underlying data-generating process for a time series is trend or first difference stationary, one method that can be used in ARDL modeling to determine the significance of lagged levels of variables in a univariate equilibrium correction system is called bound testing. This method can be used to determine the significance of lagged levels of variables in ARDL modeling. It is important to note that Haug (2002, 2003) argues that using a smaller sample size can improve the accuracy of ARDL bounds testing in the short run because it calculates the parameters for both the short run and the long run simultaneously. This is

something that should be taken into consideration. This is a crucial consideration to keep in mind.The following is an example of how to design your own ARDL portrayal of the relationship between increased commercial activity and increased economic activity:

$InGDP_t = \beta o + \beta_1 In(ICT) + \beta_2 In(EGS) + \beta_3 In(MC) + e_t$

The hypothesis of no co-integration is concerned with the following: H0: $\beta_1 = \beta_2 = \beta_3 = 0$ and H1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ is an alternative hypothesis of co-integration.

Short-run model specification

$$\Delta lnGDP_t = \beta o + \sum_{i=1}^{p} \beta_{1i} ICT_{t-1} + \sum_{i=0}^{q} \beta_{2i} EGS_{t-i} + \sum_{i=0}^{q} \beta_{3i} i\, MC_{t-1} + e_t$$

3.8.2. Long-run model specification

$$\Delta lnGDP_t = \beta o + \sum_{i=1}^{p} \beta_{1i} \Delta ICT_{t-1} + \sum_{i-0}^{q} \beta_{2i} \Delta EGS_{t-1} + \sum_{i-0}^{q} \beta_{3i \Delta MC_{t-1}} + e_t$$

Pearson's Correlation

In order to establish links between two or more variables that are statistically significant, it is necessary to first determine whether or not there is a relationship between two or more variables and, if there is, how significant or how much of a connection there is between the two or more variables. This is known as the significance test. It is also possible to measure the strength of a relationship between two variables by examining the correlation coefficient. In this investigation, the findings of the two sets of independent variables will be compared using a strategy that is similar to that employed in the previous study. For linear relationships, the correlation coefficient may be depended upon to deliver an unambiguous conclusion.

Formula: $r = \frac{1}{n-1} \frac{(x-x')(y-y')}{\sigma x\, \sigma y}$

Where R = the Correlation

n is the number of observations, and σx and σy are the standard deviations of the variables X and Y, respectively.

Regression analysis

The process of regression makes it possible to investigate the relationships that exist between variables. It is possible to make predictions as well as gain an understanding of the relationship that exists between two variables by employing regression analysis. This statistical method can be utilized to make predictions or determine the nature of the relationship that exists between two variables, such as the value of one variable being dependent on the value of another variable. The researcher employs the technique of regression in order to formulate a mathematical equation that depicts the connection between the independent variables (ICT, EGS, and MC) and the dependent variable (GDP) that are thought to be associated with the dependent variable. The dependent variable in this case is GDP. The Gross Domestic Product has been demonstrated to have a correlate with the independent variables, according to research (ICT, EGS, and MC). $In(GDP) = \beta o + \beta_1 In(ICT) + \beta_2 In(EGS) + \beta_3 In(MC) + e_t$

In the equation, where the coefficient βo, β_1, β_2, β_3 are to be determined and e_t is the error term.

GDP is an abbreviation for "Gross Domestic Product, and

ICT is an abbreviation for Information & Communication Technology.

EGS is an abbreviation for Export of Goods and Services.

MC is an abbreviation for Market Capitalization

Diagnostic and stability test

Additional testing procedures are currently being carried out as part of the process to guarantee that the model being used is accurate. Tests such as the White test for heteroscedasticity, the normalcy test of residuals (Serial correlation test), and the autocorrelation test are all a part of these evaluations, along with a number of other tests. The level of autocorrelation in the data can be determined by first comparing the residual values to the expected values, then comparing the residual values to the projected values, and finally comparing the anticipated values to the projected values. Both of these methods have been discussed in further detail earlier. If the estimated F-statistics do not correspond to the null hypothesis, then the null hypothesis must be rejected, and it is possible to draw the conclusion that the model displays heteroscedasticity.

CHAPTER IV
RESULTS AND DISCUSSIONS

Introduction

This chapter is separated into four different sections, the first of which may be an overview of the findings of the analysis. This will be followed by a discussion of the ways in which e-commerce has had an impact on the German economy, as well as how academics have interpreted the significance of this impact.

A comprehensive discussion of the descriptive statistics and data analysis methodologies covered in the first section of this work is provided in the second section. After that, we will examine and explain the stationary test of a data set, and after that, we will examine and discuss co-integration, which will be the final segment. The stationary test of a data set, which will be handled in the following part, will be examined and discussed in this section. The final portion will, among other things, provide an in-depth discussion on regression analysis, in addition to diagnostic tests, stability tests of data, and testing of whether or not results have changed over time. The E-views application was used to conduct the tests, which were all successful despite the longer time of the study, so the presentation was done in a way that was consistent with the study's aims Stationary test

Both the Augmented Dickey-Fuller (ADF) and the Philips-Perron (PP) experiments were used in this study as two-unit root tests and the results were analyzed using two-unit root tests. It was the need for high contrast and precision in the measurements that informed the selection of these metrics. When it comes to reliability, the PP unit root tests are more trustworthy than the ADF testing, as stated by Hamilton (1994). In comparison to other forms of regression tests, PP unit root tests are more resistant to the effects of serial correlation and heteroscedasticity; nonetheless, these tests also come with their own unique set of benefits and drawbacks, which ought to be taken into account as well. The suggested autoregressive distributive lag (ARDL) system that was developed by Pesaran and colleagues will be evaluated using not only the conventional estimation methods but also a novel estimation methodology that goes by the name of bounds testing. In order to evaluate the suggested autoregressive distributive lag (ARDL) system that Pesaran and his colleagues created, the researcher make use of bounds testing in conjunction with the various known estimate methods (Pesaran 1997, Pesaran, Shin & Smith 1999,). A

comparison of the p-value to the threshold value of 0.05 was carried out in order to determine whether or not the difference in question possessed statistical significance.

Table 2: Unit Root Test

ADF						
Constant Without Trends				**Constant With Trends**		
Variables	**LEVEL**	**1st Different**	**Order of Integration**	**LEVEL**	**1st Different**	**Order of Integration**
EGS	**0.889**	**0.0001**	**I (1)**	**0.5354**	**0.0007**	**I (1)**
GDP	**0.009**	**0.0001**	**I (0)**	**0.0016**	**0.0002**	**I (0)**
ICT	**0.5834**	**0.0001**	**I (1)**	**0.5005**	**0.0003**	**I (1)**
MC	**0.2492**	**0.0000**	**I (1)**	**0.1749**	**0.0000**	**I (1)**
PP						
EGS	**0.8959**	**0.0001**	**I (1)**	**0.5002**	**0.0007**	**I (1)**
GDP	**0.0006**	**0.0000**	**I (0)**	**0.0009**	**0.0000**	**I (0)**
ICT	**0.4210**	**0.0000**	**I (1)**	**0.5592**	**0.0000**	**I (1)**
MC	**0.2735**	**0.0000**	**I (1)**	**0.1680**	**0.0000**	**I (1)**

(Source: Source: Author's computation using E-view 12 software)

Table 2: Unit Root Test

Based on the results of the unit root test, which was done with the help of PP test statistics and the Augmented dickey - fuller test to show stationarity at a level and first difference, as mentioned above, the variables were put through the trend test to see if they were stationary at a level and first difference with or without a trend, as mentioned above. By doing a unit root calculation on the data, we can see that E-commerce and the German economy have a positive relationship. As it is less than 0.05 percent (0.0001 percent and 0.0007 percent, respectively) that EGS will occur when the ADF and PP are used at first difference. This signifies that the series has reached a state of stationarity at a certain point in time. Therefore, the null hypothesis that there is no unit root will be rejected as a result of this experiment. For GDP growth, the probabilities are less than 0.05 (0.0009 and 0.0006, respectively) in both scenarios

(0.0009 in one scenario and 0.0006 in the other). This indicates that the series has achieved a state of stationarity at some point in the future. We reject the null hypothesis, which claims that there is no unit root of GDP, on the basis of the evidence presented in this paper. During a time period when the probabilities were non-stationary at the level but became stationary at the 1st difference, market capitalization was an illustration of this phenomenon. As a result, it can be concluded that the null hypothesis, which states that there is no unit root, will be disproven as well.

In the case of information and communications technology, the likelihood is also greater than 0.05, indicating non-stationarity at the level. Despite the fact that the t-statistic is greater than the critical threshold of 5 percent in the case of level, the likelihood of the first difference is less than 0.05 percent, as shown in the table above (0.0000). To put it another way, there is stationarity at the first difference in the set of differences. It is also feasible to argue that the null hypothesis, which states that there is no unit root, will be rejected.

For MC, the probabilities are less than 0.05 (0.0000 and 0.0000, respectively) in both ADF and PP scenarios (0.0000 and 0.0000) at first difference. We again reject the null hypothesis, which claim that there is no unit of MC.

Bond Test Result

Table 3: ARDL Bound Test

F-Bounds Test	Null Hypothesis: No level relationship			
Test Statistic	Value	Signif	I(0)	I(1)
Asymptotic: n=1000				
F-statistic K	7.7121843	10%	2.37	3.2
		5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

(Source: Source: Author's computation using E-view 12 software)

Bound test results from the ARDL long-run simulation

The aim of this research was to determine whether or not the data set under examination had any occurrences of co-integration by employing a bound test that had been devised on the basis of the ARDL method. The null hypothesis cannot be rejected if the F-statistic is less than the lower limit of the distribution (critical values for I (0)). Rather than being ruled out of consideration if the statistic exceeds I (1), the null hypothesis of no co-integration is ruled out of consideration I (1). It is therefore considered inconclusive when the test statistic falls within the range of possibilities indicated by the statistical procedure. With the F-statistic (7.712184) in hand, we can deduce that there is a long-term link between the independent factors and the dependent variable at both a 5 percent and a 10 percent level of significance for the independent variables.

ARDL Results

Table: 4. ARDL Long-run

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	1.03	0.55	1.86	0.05
GDP (-1)	0.34	0.16	2.09	0.04
EGS	0.15	0.07	2.07	0.04
ICT	-0.87	0.27	-3.14	0.00
MC	0.13	0.02	4.60	0.00

(Source: Author's computation using E-view 12 software)

The results of the long-run analysis demonstrate that all variables, including EGS, GDP, and MC, are significant and have a positive link to economic growth, with the exception of ICT, which is statistically significant but had a negative coefficient in the long-run analysis.

Table 4 data shows that there is a correlation or positive relationship between EGS and GDP. EGS is significant with a probability of 0.04 which meets the 5% threshold of significance and has a positive coefficient of 0.15. This means that for every one-unit rise in EGS, there is a corresponding 0.150934-unit increase in GDP at a significance level of 0.0481. Therefore, we reject the null hypothesis of no significant influence

between EGS and GDP and conclude that there is a positive and significant relationship between EGS and GDP in the long run at a 5% level of significance.
The data for GDP also shows that there is a positive and significant relationship with the probability of 0.04 and a coefficient of 0.34. This implies that we reject the null hypothesis and conclude that there is a positive or long-run relationship impact of e-commerce e on GDP.

On the other hand, the data on information communication technology (ICT) shows that there is a negative coefficient, yet statistically significant relationship between Information Communication Technology and Gross Domestic Product at 0.00 probabilities; when ICT increases by 1 unit, GDP will decrease by -0.878966. This is shown by the fact that there is a negative relationship between ICT and GDP. Therefore, we accept the null hypothesis which states that there is no significant influence of e-commerce on consumers. The results of our findings clearly show that ICT is a proxy for e-commerce.

The MC demonstrates that there is a long-run link between MC and GDP that is both positive and significant; when there is a 1 unit increase in MC, GDP will also increase by 0.135452 units. Therefore, we reject the null hypothesis which states that there is no significant relationship between the income of consumers and purchase decisions, simply because MC is used as a proxy for income, and conclude that there is a positive and significant relationship in the long run with a probability of 0.00
This study demonstrates that there is a negative relationship between ICT and GDP growth in the long run; however, in the short run, there is a unidirectional causality flow from ICT to GDP growth; this finding is comparable to the findings of Papaioannou (2007) and Yousefi (2009); Therefore, economic policies regarding the investment of ICT will not have any effect on the German economy in the long run, but they will have such an effect in the short run.

Table 5: Short-run ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	0.34	0.14	2.35	0.02
CointEq(-1)	-1.25	0.18	-6.64	0.00

(Source: Source: Author's computation using E-view 12 software)

The findings presented in Table 5 show that the short-run data is positive and statistically significant at 5%, as shown by the fact that the first lag of gross domestic product has a significant level of 0.02. Since this level is lower than the significance level of 0.05, it can be deduced that the results of the short-run analysis are as described above. The fact that the speed of adjustment to the long run is negative and significant at 0.0000, as shown by the error correction model ECM, indicates that there is a 100% level of speed of adjustment to equilibrium in the long run, in the short run, there is a unidirectional causality flow from ICT to GDP growth; this finding is comparable to the findings of Papaioannou (2007) and Yousefi (2009);

Thus, we reject the null hypothesis and conclude that there is a positive influence or relationship between variables in the short run.

Residual Diagnostic test

Table 6: Residual Diagnostic test result

Name of the Test	Null Hypothesis result	Statistics value	Probability
Serial Correlation Test	No serial correlation at up to 2 lags	0.268183	0.7676
Jarque-Bera (JB) Test	Residuals are normally distributed at a 5% level	1.728917	0.421280
White (CH-sq) Test	No conditional heteroscedasticity at 5%	2.287484	0. 0567

(Source: Source: Author's computation using E-view 12 software)

There is no serial correlation in the residuals, no conditional heteroscedasticity, and no normal distribution, all of which are in agreement with the hypothesis, as shown in Table 6. In reality, the residuals do not follow a normal distribution in any way whatsoever.

The serial correlation test's null hypothesis argues that there is no correlation between the data in the model because it says that there should be none. On the other

hand, the evidence presented by the alternative hypothesis seems to point to the existence of a correlation. The probability value of 0.7676 was found to be greater than the threshold of 0.05%, indicating that the null hypothesis should be accepted and that there is no serial correlation in the model. This was found to be the case after it was discovered that the probability value of 0.7676 was greater than the threshold of 0.05%.

In addition, the null hypothesis for the heteroscedasticity test suggests that the model does not exhibit heteroscedasticity at the 5% significance level. The hypothesis was tested at a significance level of 10%, and the results showed that it was not moving in any direction. Because it was discovered that the probability value of 0.0567 is larger than the threshold number of 0.05%, this finding suggests that the problem is more serious than the threshold value indicates it should be. As a consequence of this, we are unable to reject the null hypothesis at the 5% significance level, and as a consequence of this, we come to the conclusion that the model does not exhibit heteroscedasticity at the 5% significance level, but rather at the 10% significance level, as was stated earlier. When we reject the null hypothesis with a significance level of ten, however, we are led to the realization that the model in question does, in fact, exhibit heteroscedastic behavior.

The alternative hypothesis shows that residuals are regularly distributed at this percentage point, but the null hypothesis shows that residuals are not normally distributed at 5 percent. The null hypothesis can be refuted by showing that the alternative hypothesis is true. A statistically significant difference can be concluded from the fact that the Jarque-Bera probability of 0.421280 is significantly higher than the threshold of 0.05 percent. As a consequence of this, we get to the conclusion that residuals are not normally distributed at the 5 percent level, which leads us to reject the null hypothesis of co-integration.

TR Stability Test

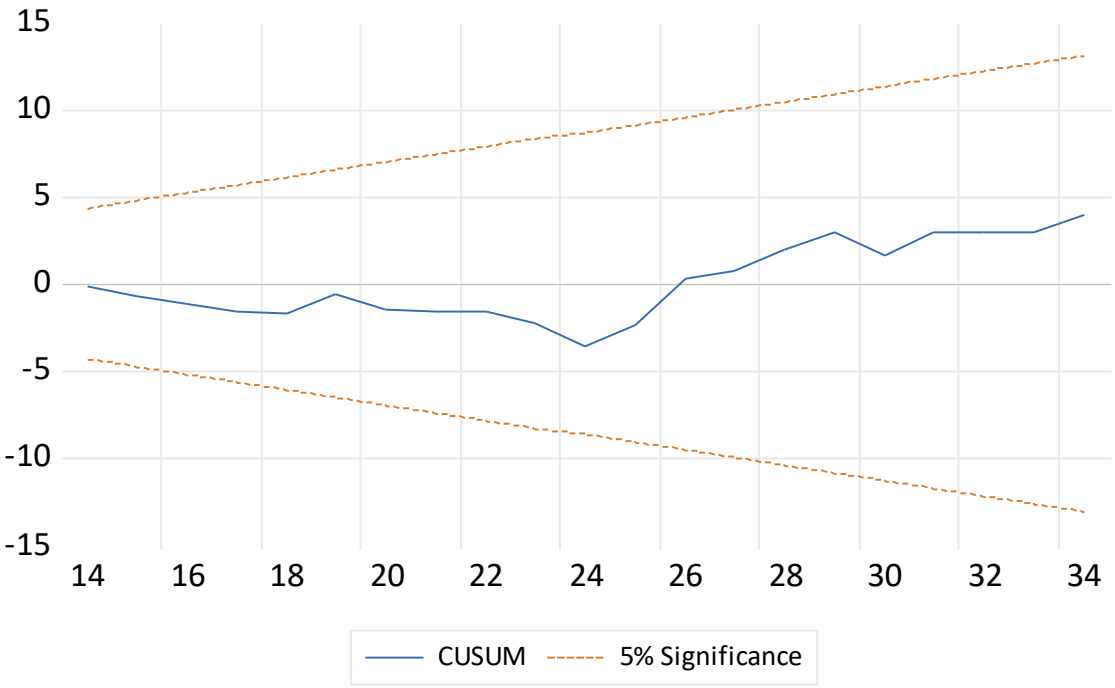
In nonlinear models, one of the most frequently encountered challenges is maintaining the stability of the estimated parameters (Saliminezhad et al., 2018). Examining the reliability of the model that is being used is an essential step in ensuring that the findings will be accurate. The CUSUM test, which was designed by Brown and his colleagues, is one way that can be utilized in order to accomplish this goal (1975). It is essential to keep stability throughout the entirety of the estimation process;

nevertheless, the degree to which one may rely on post-estimation tests can vary considerably (Hansen, 2000).

CUSUM Test Result

TR Stability test

Figure 4



(Source: Source: Author's computation using E-view 12 software)

When it comes to the Null hypothesis, all parameters are expected to be stable, but when it comes to the alternative hypothesis, all parameters are not assumed to be stable. As a result of the outcomes of the test, it was discovered that the BLUE line is contained within the relevant border of each of the red lines. Accepting the null hypothesis (which is a good thing) and rejecting the alternative hypothesis (which is less than ideal) leads us to the conclusion that the residual variances are not unstable, but rather stable as a result of this procedure. Because of this, we can say that the conclusion is correct (for details see Brown, Durbin, and Evans, 1975).

Hypothesis Results

Long-run Hypothesis Finding

H_1: There is no significant influence of e-commerce on consumers

N0: the hypothesis states that there is no significant influence of e-commerce on consumers. The results of our findings clearly show that ICT is a proxy for e-commerce and is not statistically significant at a 0.05 level of significance, with a probability value of 0.00.

H_1: There is no significant relationship between the income of consumers and purchase decisions.

H0; the hypothesis states that there is no significant relationship between the income of consumers and purchase decisions. We reject the null hypothesis in chapter 1, simply because MC is used as a proxy for income, and is statistically significant in the long run with a probability of 0.00

H_1: There is no significant relationship between E-commerce and Economy growth.

The hypothesis states that there is no significant relationship between E-commerce and Economy growth. The result of our findings clearly shows that EGS which is a proxy for economic growth is statistically significant in the long run with a probability value of 0.04, so we reject the null hypothesis.

H_4: There is no significant relationship between usage of the internet and Smartphone users.

The hypothesis state that there is no significant relationship between usage of the internet and Smartphone users. The result shows that ICT is a proxy of e-commerce is statistically significant at a 0.05 level significance with a probability value of 0.00, so we reject the null hypothesis

Short Run Hypothesis Findings

We come to the conclusion that there is a positive influence or relationship between variables in the short run after concluding that the null hypothesis should not be accepted. This result is also consistent with the findings of Papaioannou (2007) and Yousefi (2009), which discuss the short run and assert, among other things, that there is a unidirectional causality flow from ICT to GDP.

CHAPTER V

SUMMARY, CONCLUSION, AND RECOMMENDATION

Introduction

This study was conducted with the intention of acquiring a deeper comprehension of the influence that the expansion of the online retail sector has had on economic expansion in Germany. The findings, conclusions, and recommendations obtained from this study are presented in this chapter. The growth of the economy in Germany has been significantly influenced by the rise of e-commerce. It is absolutely necessary for governments and other enterprises in Germany and all around the world to adhere to the recommendations that are outlined in the study. The research was carried out in Germany over a period of 34 years, utilizing secondary data that was derived from data collection carried out by the World Bank.

Summary of the findings

As a part of this chapter of the thesis, one of its primary goals is to evaluate and compare the findings with the research questions that were generated in Chapter One: “What is the impact of e-commerce in Germany? What are the benefits of E-commerce in Germany? What are the challenges associated with e-commerce in Germany?

After doing a linked literature review before beginning the investigation, it was determined that the subject of this investigation would be a positive impact on the investigation. Because of my in-depth study of the literature, the research now possesses a firm understanding of the historical evolution and pattern of the relationship between e-commerce and economic growth in Germany. The key objectives of the research were to gain a better knowledge of the impact of e-commerce on Germany's economic growth as well as to make recommendations. The study's goal was to determine whether or not e-commerce will have a significant impact on German economic growth, as well as whether or not such an impact will be significant. According to the research data, it appears that the likelihood of an e-commerce response to the German economy is statistically significant in the long run at a five percent level of significance, with a probability for the Export of Goods and Services (0.01) and a positive coefficient of 0.36 in the long run. On the whole, this implies that E-commerce has had a beneficial impact on the German economy for a significant amount of time. It is reasonable to infer that e-commerce has risen in harmony with

exports of goods and services with the premise that e-commerce will increase in accordance with exports of goods and services. One of the most important factors in deciding this outcome is the stock market's strong institutional basis.

Shahjee (2017) examines the benefits and drawbacks of e-commerce. Businesses can now offer their products on an international market, which was previously impossible due to regional restrictions. E-commerce also affects merchants, providing 24/7 access and discounts has helped them increase revenue and profit margins. Online stores provide more merchandise and better customer service than traditional stores.

Ziaul Hoq (2005) examines the multiple effects e-commerce has on a business and how it helps many organizations cut costs. With e-commerce, firms may pass on numerous costs to customers, such as shipping fees, and cutting costs. It also reduces the number of middlemen in the value-added chain, decreasing costs. In addition, customization is available through e-commerce, which has revolutionized the way people acquire products and services since commodities and services can be tailored to match the specific needs and desires of individual clients.

According to the findings of our research, there is a connection between the growth of online retail and the expansion of the economy in Germany. Other research studies, such as the ones carried out by Papaioannou (2007) and Yousefi (2009), have also arrived at the same conclusion, which is that there is a unidirectional causality flow from ICT to GDP. This was found to be the case. This discovery is in line with the findings of other studies. Also, a study done in 2017 by the German Federal Ministry for Economic Affairs and Energy found that the country's use of e-commerce was a major factor in the country's rising economic growth and productivity. This finding was made possible by the fact that e-commerce is now widely used in the country.

On the other hand, it is of the utmost importance to draw attention to the fact that the results of earlier study inquiries have produced conflicting evidence. According to the conclusions of a study that was carried out by the European Commission in 2019, e-commerce may have a positive impact on the rate of economic growth in some EU nations, while the impact of e-commerce may be less substantial in others. The study was done in 2019. This shows how important it is to do more research to learn more about how e-commerce affects economic growth in different countries.

The results of our research and those of other research studies all point to the same conclusion: the growth of e-commerce in Germany is good for the growth of the

country's economy. To fully understand how big of an effect this has, though, more research needs to be done to find out how big it is and how it compares to the effects it has had in other countries.

According to the findings of the study, the response to e-commerce has a substantial impact on the German economic climate.

Recent research has shown that the adoption of e-commerce practices has had a significant influence on the expansion of the German economy. An examination of the available data reveals that in the near future, e-commerce will have a statistically significant impact on GDP equal to 5%, with a chance of 0.01%. E-commerce is also significantly influenced by other factors, such as GDP, which has a statistical significance level of 5%. The fact that the "null hypothesis," which said that there is no correlation between the variables, was proven to be false demonstrates that there is, in fact, a correlation between e-commerce and GDP on a shorter time scale. Furthermore, the function of information and communication technology (ICT) in this relationship is statistically significant at 5%, with a probability of 0.04 at the 5% level. This is due to the fact that ICT has been shown to play an important part in the development of this relationship.

The conclusion that there is a connection between variables in the short term can be drawn from the fact that the null hypothesis has been shown to be false. In addition, data analysis performed at a significance level of 5% reveals that ECT's international trade in goods and services has a statistically significant impact, with a probability of 0.00. This conclusion was reached by determining whether or not there was a correlation between the two variables. To provide a brief summary, the statistical evidence suggests that the growth of e-commerce has a beneficial impact on the expansion of the German economy, both in the short term and in the long term, and that this impact keeps growing over the course of time.

The gross domestic product (GDP) and the per capita income of a country are two indicators of the country's economic progress (PFI). Following the spread of e-commerce, there has been a considerable increase in investment in information and communication technology (ICT), which has resulted in higher levels of productivity and economic development. In order to evaluate the success of government policies, it is necessary to analyze the mechanisms of influence on economic growth by utilizing the expenditure technique of GDP accounting. It is estimated that the German economy exported goods and services worth $1810.93 billion in 2019, making it one

of the world's most successful exporters. According to the World Bank, the service sector contributes to around 70% of total GDP, followed by industry, which accounts for 29.1%, and agriculture, which accounts for 0.9%. An increase in economic growth is expected as a result of the expansion of e-commerce in Germany, which has the largest manufacturing economy in Europe and the largest manufacturing economy in the world.

The relationship between this research and businesses

E-commerce makes it easier for businesses to enter international markets and broaden their customer bases around the globe, both of which contribute to the growth of the economy.

The E-commerce approach exposes the business to new competitors located all over the world, leading to an increase in overall competitiveness and income. Therefore, it is essential to make certain that the goods and services are of high quality while remaining economically viable. If the wants of the customers can be met by the competitors in a more satisfactory manner, then it indicates that the company will not be able to keep its customers as clients.

Reduced costs include: The adoption of an e-commerce model gave a lot of cost reductions to the firm in terms of selling and distribution, as well as procurement and overhead costs, which is one of the most significant advantages of using this model. This reduction in costs assists the company in enhancing the profit margins that it achieves.

More options available: When a business operates using an e-commerce model, it is able to supply its clients with a greater variety of products and services. Additionally, the clients have the ability to compare the products offered at the various e-commerce sites before making a final choice.

The ability to provide clients with discounts is facilitated by the use of e-commerce by the firm. As a direct consequence of this, they are offered at a lower cost than the products and services that can be found in traditional retailers. This causes customers to spend more time in real stores window shopping and encourages them to buy things through online retailers.

The interests and preferences of customers are tracked whenever a consumer makes a purchase online by collecting the customer's email address and mobile phone number and storing them in a database. This enables commercial organizations to better inform

their clients about new products and services that are on the market and are relevant to the items they have previously purchased from those firms. It is helpful in advertising the new product to potential clients who might buy it.

Concerns with safety and security E-commerce has a number of important effects, one of the most significant of which is the provision of security to customers while they are transacting online. This protection extends both to the customers' private information and to the transactions themselves.

The adoption of e-commerce practices inside commercial settings leads to an increase in the aggregated number of working hours. E-commerce provides businesses with the ability to continue selling things even after typical business hours, which ultimately results in an increase in the overall amount of income that is created by the enterprises. Due to the relatively low expenses that are connected with e-commerce for businesses, there is a possibility that some organizations may have the goal of adopting either forward or backward integration strategies in order to counteract their supplier and sell directly to their customers. When a company sells its products through an online store, it is able to avoid a considerable number of costs that would otherwise need to be incurred. These costs include the cost of rent and utilities, as well as the cost of hiring a large staff to run the store.

As a result of the findings of this research, it is possible to make the assertion that most firms that participate in e-commerce will, without a shadow of a doubt, gain the benefits of doing so.

An established statistical proof has been produced for the impact of e-commerce on businesses and economic growth; according to the findings of this research, e-commerce has a positive impact on businesses and the empowerment of the economy. In the case of well-managed organizations, their productivity will be effective and efficient, resulting in lower costs for consumers and higher revenues for the firms, as well as having a substantial impact on the economy through the export of goods and services among other things. Giving small, medium-sized, and large-scale firms a considerable competitive advantage

In conclusion, there is a good relationship between electronic commerce, firms, management, and managers who are very effective and efficient in the transaction stage on the internet, all of which contribute to the lucrative German economy's growth in a positive way, as demonstrated in this study.

Conclusion

The Secondary research shows that there is considerable room for the development of e-commerce in nations like Germany. It offers business organizations and customers several benefits, including cost reduction, discounts, wider choice, and higher demand. Research reveals that the number of individuals using smartphones and having internet access is increasing, which impacts businesses. E-commerce has a large impact on businesses, per the research. Business enterprises must invest in e-commerce and establish a proper infrastructure because traditional shopping will soon disappear.

Due to the volume of data to be collected and evaluated, the secondary online information may not be representative of the total population. Information overload, reliability and security difficulties, access prices, societal differences, and the challenge of monitoring the Internet are some of the challenges that exist. Technology, people, organizations, policy, and technical standards all interact to create an e-commerce environment, which is designed to make it easier for people to conduct e-commerce transactions. Firms can benefit from these frameworks by better understanding e-commerce and its practical use in their specific industries.

A favorable influence on economic growth was decided after careful analysis of the information presented. E-commerce was found to have a beneficial impact on economic growth in Germany. In the right hands, e-commerce can be a very effective business strategy that can help firms and consumers save money and time while also enhancing their overall productivity. Despite the drop in the stock market and the price of commodities throughout the period of the pandemic, e-commerce has been able to grow and continue to receive a high amount of transaction requests. E-commerce offers a significant opportunity in the path of company and customer behavior in Germany, and it has contributed to the expansion of the country's economic growth. Additionally, it is the technique of adopting new approaches and styles into an established transaction or transactional situation. Large-scale use of E-Commerce in the Internet world is actually significantly more effective than other ways when it comes to promoting the goodwill of an individual or a state around the world.

Indeed, e-commerce has grown to become an important part of our society, and governments around the world are taking e-commerce seriously and allocating adequate resources to its development, including Germany and other countries. In accordance with the conclusions of the study, e-commerce has an effect on economic

factors and growth rates. Individuals benefit from increased incomes and higher living standards, as well as from the restructuring of markets and the expansion of marketing, as well from an increase in sales and exports, all of which contribute to an increase in production and economic growth rates in Germany as a result of globalization. As a result, it can be stated that the alternative Hypothesis, which states that there is a significant influence of e-commerce on consumers, can be positively accepted because there is a significant influence of e-commerce on every consumer who transacts through e-commerce, and the influence of e-commerce on economic growth using the variables listed below. GDP, EGS, ICT, and MC are all statistically significant variables.

Recommendation

In the current economic climate, there are several recommendations for e-commerce businesses in Germany to take advantage of the growth in the economy:

1. Focus on customer satisfaction: With a strong economy, consumers are more likely to make purchases online. To capitalize on this, e-commerce businesses should prioritize customer satisfaction by offering high-quality products and excellent customer service.
2. Invest in digital marketing: In a digital age, it is essential to have an online presence. E-commerce businesses should invest in digital marketing strategies, such as SEO, social media marketing, and paid advertising, to reach a larger audience and drive sales.
3. Expand product offerings: With a growing economy, consumers may be willing to spend more on new and innovative products. E-commerce businesses should consider expanding their product offerings to meet the demand for new and unique products.
4. Utilize cross-border selling: Germany has a strong export market, and e-commerce businesses can tap into this by selling their products internationally. By utilizing cross-border selling platforms, businesses can reach new customers in other countries and increase their revenue.
5. Prioritize security: As e-commerce continues to grow, it is essential to prioritize security to protect both the business and customers. Businesses should invest in robust security measures, such as SSL certificates and secure payment gateways, to protect against cyber threats.

Reference

Abou El-Seoud, M. S., Taj-Eddin, I. A., Seddiek, N., El-Khouly, M. M., & Nosseir, A. (2014). E-learning and students' motivation: A research study on the effect of e-learning on higher education. *International journal of emerging technologies in learning (iJET)*, *9*(4), 20-26.

Ahi, A. A., Sinkovics, N., Shildibekov, Y., Sinkovics, R. R., & Mehandjiev, N. (2021). Advanced technologies and international business: A multidisciplinary analysis of the literature. *International Business Review*, 101967.

Ali, B. J., Hasan, H., & Oudat, M. S. (2021). Relationship among export, import and economic growth: Using co-integration analysis. *Psychology and Education Journal*, *58*(1), 5126-5134.

Al-Somali, S. A., Gholami, R., & Clegg, B. (2011). An investigation into the adoption of electronic commerce among Saudi Arabian SMEs. *Journal of Electronic Commerce in Organizations (JECO)*, *9*(2), 41-65.

Alyoubi, A. A. (2015). E-commerce in developing countries and how to develop them during the introduction of modern systems. *Procedia Computer Science*, *65*, 479-483.

Anuj, K., Fayaz, F., & Kapoor, N. (2018). Impact of e-commerce in Indian economy. *IOSR Journal of Business and Management (IOSR-JBM)*, *20*(5), 59-71.

Arkani-Hamed, N., Finkbeiner, D. P., Slatyer, T. R., & Weiner, N. (2009). A theory of dark matter. *Physical Review D*, *79*(1), 015014.

Azvine, B., Cui, Z., Nauck, D. D., & Majeed, B. (2006, June). Real-time business intelligence for the adaptive enterprise. In *The 8th IEEE International Conference on E-Commerce Technology and The 3rd IEEE International Conference on Enterprise Computing, E-Commerce, and E-Services (CEC/EEE'06)* (pp. 29-29). IEEE.

Batra, V. *Sumanjeet. 2011. The state of microfinance in India: Emergence, delivery models and issues*. AIUB Bus Econ Working Paper Series AIUB-BUS-ECON-2011-02, American International University-Bangladesh, Office of Research and Publications (ORP).

Bbaale, E., & Mutenyo, J. (2011). Export composition and economic growth in Sub-Saharan Africa: A panel analysis. *Consilience*, (6), 1-19.

Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale: an updated literature review. *Journal of psychosomatic research*, *52*(2), 69-77.

Brown, R. L., Durbin, J., & Evans, J. M. (1975). Techniques for testing the constancy of regression relationships over time. *Journal of the Royal Statistical Society: Series B (Methodological)*, *37*(2), 149-163.

Brynjolfsson, E., & Saunders, A. (2009). What the GDP gets wrong (why managers should care). *MIT Sloan Management Review*, *51*(1), 95.

Cardona, M., Duch-Brown, N., Francois, J., Martens, B., & Yang, F. (2015). *The macro-economic impact of e-commerce in the EU digital single market* (No. 2015/09). Institute for Prospective Technological Studies Digital Economy Working Paper.

Chopra, N., Malhotra, K., & Dalmia, A. IMPACT OF E-COMMERCE ON BUSINESS.

Dahiya, M. (2017). Study on E-Commerce and it's Impacts on Market and Retailers in India. *Advances in Computational Sciences and Technology*, *10*(5), 1495-1500.

Dannenberg, P., Fuchs, M., Riedler, T., & Wiedemann, C. (2020). Digital transition by COVID-19 pandemic? The German food online retail. *Tijdschrift voor economische en sociale geografie*, *111*(3), 543-560.

Davidavičienė, V., Raudeliūnienė, J., Tvaronavičienė, M., & Kaušinis, J. (2018). The importance of security aspects in consumer preferences in an electronic environment. *Journal of security and sustainability issues*, *8*, 399-411.

Dehtyarova, I., Kubatko, O., Karintseva, O., & Derykolenko, A. (2019). Disruptive technologies for the transition of digital economies towards sustainability. *Економічний часопис-XXI*, (9-10), 22-30.

Desai, D. (2016). A study of personalization effect on users' satisfaction with e-commerce Websites. *Sankalpa*, *6*(2), 51.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association*, *74*(366a), 427-431.

Doh, J., Rodrigues, S., Saka-Helmhout, A., & Makhija, M. (2017). International business responses to institutional voids. *Journal of International Business Studies*, *48*(3), 293-307.

Dukuly, F. S., & Huang, K. (2020). The Study on the Impact of Liberia's Exports and Imports on Its Economic Growth. *Open Journal of Business and Management*, *8*(6), 2649-2670.

Fefer, R. F. (2020). Internet Regimes and WTO E-Commerce Negotiations. *Congressional Research Service*, *62*.

Forouzanfar, M. H., Afshin, A., Alexander, L. T., Anderson, H. R., Bhutta, Z. A., Biryukov, S., ... & Carrero, J. J. (2016). Global, regional, and national comparative risk assessment of 79 behavioral, environmental and occupational, and metabolic risks or clusters of risks, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. *The lancet*, *388*(10053), 1659-1724.

Fortanier, F., Liberatore, A., Maurer, A., Pilgrim, G., & Thomson, L. (2017). The OECD-WTO balanced trade in services database. *World Trade Organization and Organisation for Economic Co-operation and Development*.

Gabriel, J. M. O., Ogbuigwe, T. D., & Ahiauzu, L. U. (2016). Online shopping systems in Nigeria: Evolution, trend and prospects. *Asian Research Journal of Arts & Social Sciences*, *1*(4), 182-276.

Gessner, G. H., & Snodgrass, C. R. (2015). Designing e-commerce cross-border distribution networks for small and medium-sized enterprises incorporating Canadian and US trade incentive programs. *Research in Transportation Business & Management*, *16*, 84-94.

Gomez-Herrera, E., Martens, B., & Turlea, G. (2014). The drivers and impediments for cross-border e-commerce in the EU. *Information Economics and Policy*, *28*, 83-96.

Grange, C., Benbasat, I., & Burton-Jones, A. (2020). A network-based conceptualization of social commerce and social commerce value. *Computers in Human Behavior*, *108*, 105855.

Gregory, G. D., Ngo, L. V., & Karavdic, M. (2019). Developing e-commerce marketing capabilities and efficiencies for enhanced performance in business-to-business export ventures. *Industrial Marketing Management*, *78*, 146-157.

Griffith-Jones, S. (2014). *A BRICS development bank: a dream coming true?* (No. 215). United Nations Conference on Trade and Development.

Groß, M. (2016). Impediments to mobile shopping continued usage intention: A trust-risk-relationship. *Journal of Retailing and Consumer Services*, *33*, 109-119.

Gujarati, D., & Porter, D. (2009). *Essentials of Econometrics 4e*. McGraw Hill.

Hamilton, J. D., & Susmel, R. (1994). Autoregressive conditional heteroskedasticity and changes in regime. *Journal of econometrics*, *64*(1-2), 307-333.

Hoq, Z., Kamal, M., & Chowdhury, A. H. M. (2005). The economic impact of e-commerce.

Howlett, M., & Cashore, B. (2020). Public policy: Definitions and approaches. In *A modern guide to public policy*. Edward Elgar Publishing.

Janow, M. E., & Mavroidis, P. C. (2019). Digital Trade, E-commerce, the WTO, and regional frameworks. *World Trade Review*, *18*(S1), S1-S7.

Janow, M. E., & Mavroidis, P. C. (2019). Digital Trade, E-commerce, the WTO, and regional frameworks. *World Trade Review*, *18*(S1), S1-S7.

Jorgenson, D. W., Ho, M. S., & Stiroh, K. J. (2005). productivity, Volume 3: information technology and the American Growth Resurgence. *MIT Press Books*, *3*.

Joseph, B. (2019). The Roles of Information and Communication Technologies (ICTs) and E-Commerce as Agents of Nigeria's Economic Development: Review of Challenges and Prospects. *Wireless Engineering and Technology*, *10*(03), 41.

Kwilinski, A., Volynets, R., Berdnik, I., Holovko, M., & Berzin, P. (2019). E-Commerce: Concept and Legal Regulation in Modern Economic Conditions. *Journal of Legal, Ethical and Regulatory Issues*, *22*, 1-6.

Liginlal, D., Ahmad, R., Meeds, R., & Gopinath, P. (2017). Metaphorical expressions in e-commerce: A study of Arabic language websites. *Journal of Global Information Technology Management*, *20*(2), 75-90.

Liu, C. L. E., Sinkovics, R. R., Pezderka, N., & Haghirian, P. (2012). Determinants of consumer perceptions toward mobile advertising—a comparison between Japan and Austria. *Journal of Interactive Marketing*, *26*(1), 21-32.

MĂDĂLINA, B., & DANIELA, M. (2018). E-COMMERCE--AN EXPANDING ALTERNATIVE OF THE TRADITIONAL SALE IN THE WORLD AND IN ROMANIA. *Agricultural Management/Lucrari Stiintifice Seria I, Management Agricol*, *20*(1).

Melnyk, L., Dehtyarova, I., Kubatko, O., Karintseva, O., & Derykolenko, A. (2019). Disruptive technologies for the transition of digital economies towards sustainability. *Економічний часопис-XXI*, (9-10), 22-30.

Molla, A., & Heeks, R. (2007). Exploring e-commerce benefits for businesses in a developing country. *The Information Society*, *23*(2), 95-108.

Nair, K. S. (2017). Impact of e-commerce on global business and opportunities-A Conceptual Study. *International Journal of Advanced Engineering and Management Research*, *2*(2), 324-336.

Ohanyan, G., & Androniceanu, A. (2017). Evaluation of IMF Programmes on Employment in the EU. *Acta Oeconomica*, *67*(3), 311-332.

Organization for Economic Co-operation and Development. (2019). *OECD skills outlook 2019: Thriving in a digital world*. Paris, France: OECD.

Patel, J. P., Soni, P. R., & Patel, M. V. (2019). E-Commerce: Learning on Benefits and Challenges in a Developing Economy in India. *Emerging Trends in International Business and Commerce*, 49.

Pisano, G. P., & Shih, W. C. (2012). *Producing Prosperity: Why America needs a manufacturing renaissance*. Harvard Business Press.

Ray, S. (2011). Emerging trend of e-commerce in India: Some crucial issues, prospects and challenges. *Computer Engineering and Intelligent Systems*, *2*(5), 17-35.

S. S., Dwivedi, Y. K., & Williams, M. D. (2015). Social media as a bridge to e-commerce adoption in SMEs: A systematic literature review. *The Marketing Review*, *15*(1), 39-57.

Saarijärvi, H., Joensuu, J., Rintamaki, T., & Yrjölä, M. (2018). One person's trash is another person's treasure: Profiling consumer-to-consumer e-commerce in Facebook. *International Journal of Retail & Distribution Management*.

Saliminezhad, A., & Lisaniler, F. G. (2018). Validity of unbalanced growth theory and sectoral investment priorities in Indonesia: Application of feature ranking methods. *The Journal of International Trade & Economic Development*, *27*(5), 521-540.

Saravanakumar, M., & SuganthaLakshmi, T. (2012). Social media marketing. *Life science journal*, *9*(4), 4444-4451.

Schumpeter, J. A. (1982). The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle (1912/1934). *Transaction Publishers.–1982.–January*, *1*, 244.

Semykina, A., & Wooldridge, J. M. (2013). Estimation of dynamic panel data models with sample selection. *Journal of Applied Econometrics*, *28*(1), 47-61.

Sheng, S., Zhou, K. Z., & Li, J. J. (2011). The effects of business and political ties on firm performance: Evidence from China. *Journal of Marketing*, *75*(1), 1-15.

Soltan, M., Crowley, L., Melville, C. R., Varney, J., Cassidy, S., Mahida, R., ... & Thickett, D. (2021). L12 To what extent are social determinants of health, including household overcrowding, air pollution and housing quality deprivation, modulators of presentation, ITU admission and outcomes among patients with SARS-COV-2 infection in an urban catchment area in Birmingham, United Kingdom?

Stewart, D. M., Tian, L., Notarangelo, L. D., & Nelson, D. L. (2007). X-linked hypogammaglobulinemia and isolated growth hormone deficiency: an update. *Immunologic research*, *38*(1), 391-399.

Terlutter, R., & Ninaus, K. (2022). Convergence, Consumer Behavior, and Change Management. In *Media and Change Management* (pp. 231-248). Springer, Cham.

Terzi, N. (2016). The impact of e-commerce on international trade and employment. In *Encyclopedia of e-commerce development, implementation, and management* (pp. 2271-2287). IGI Global.

Terzi, N. (2016). The impact of e-commerce on international trade and employment. In *Encyclopedia of e-commerce development, implementation, and management* (pp. 2271-2287). IGI Global.

Todaro, M. P. (1997). Urbanization, unemployment and migration in Africa: Theory and policy.

Voigtländer, M., & Seipelt, B. (2018). *The impact of demographics on the German retail market* (No. 6/2018). IW-Report.

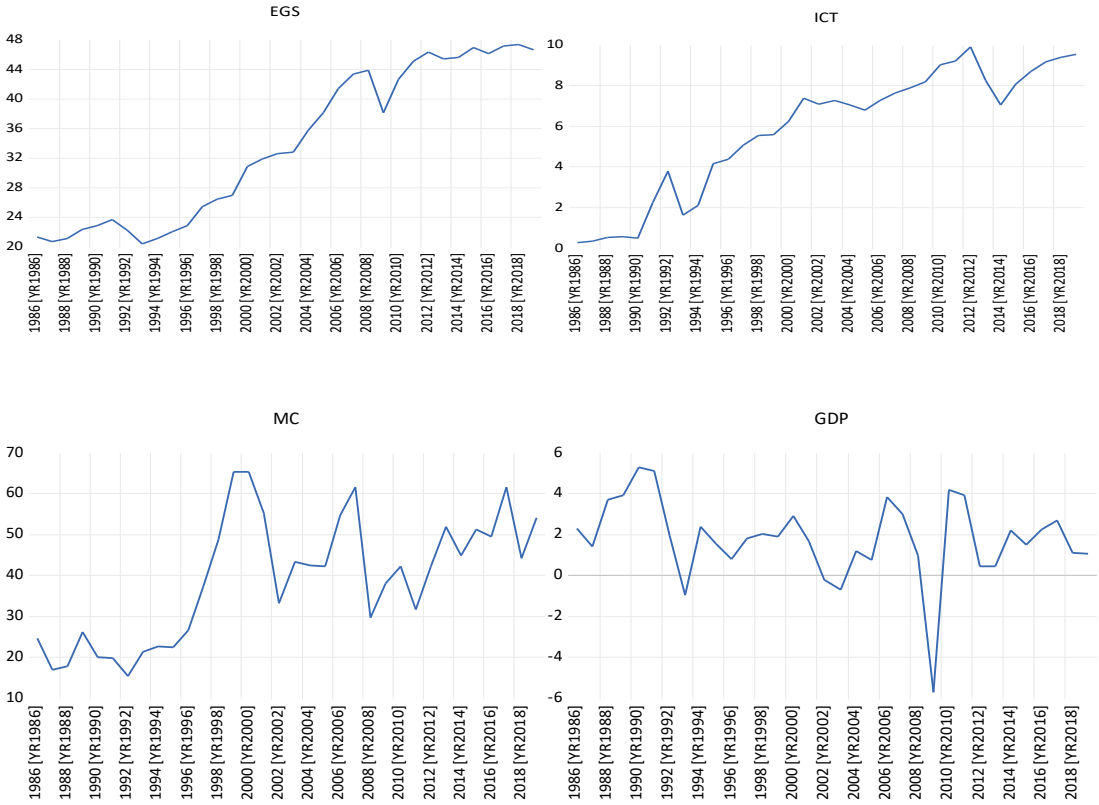
Westbrook, G. I. N. A., & Angus, A. L. I. S. O. N. (2021). Top 10 global consumer trends 2021. *Euromonitor international*, 1-47.

Wolfe, R. (2019). Learning about digital trade: privacy and e-commerce in CETA and TPP. *World Trade Review*, *18*(S1), S63-S84.

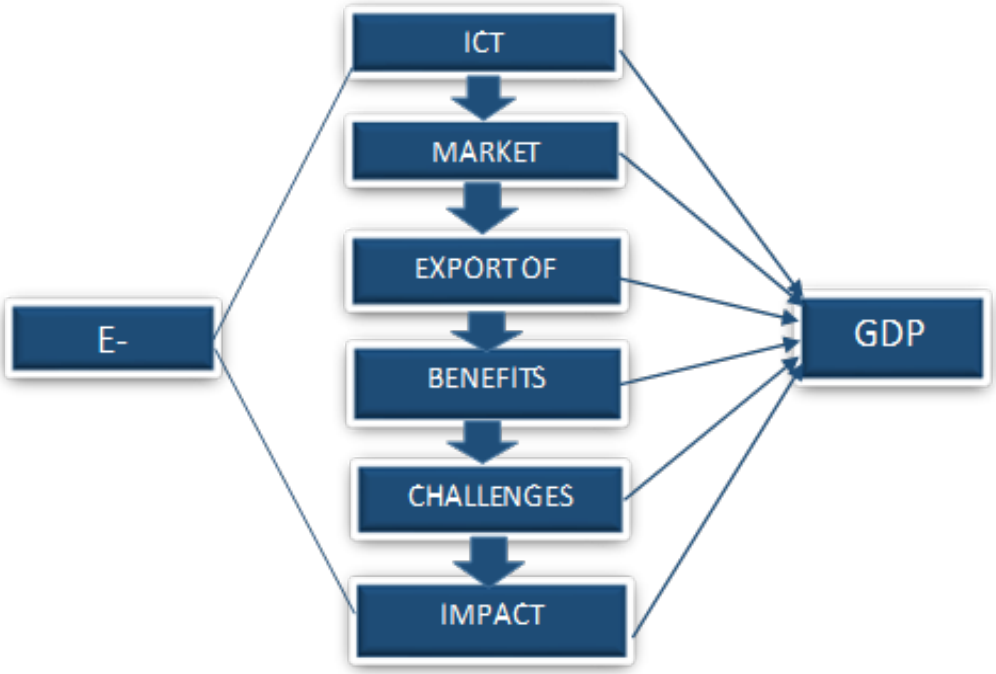
Zhang, C., Ouyang, B., Yang, C., Zhang, X., Liu, H., Zhang, Y., ... & Ye, Z. (2013). Reducing ASA leads to leaf lesion and defense response in knock-down of the AsA biosynthetic enzyme GDP-D-mannose pyrophosphorylase gene in the tomato plant. *PloS one*, *8*(4), e61987.

Appendix

Appendix 1: Graphs



Appendix 2: Conceptual Framework



Appendix 3: ***Descriptive Statistic***

	GDP	EGS	ICT	MC
Mean	33.72513	1.776883	5.820953	38.92713
Median	32.70215	1.839711	7.042873	42.11631
Maximum	47.30105	5.255006	9.895416	65.37046
Minimum	20.31344	-5.693836	0.289813	15.42018
Std. Dev	10.35965	2.00355	3.111896	15.12444
Skewness	0.029977	-1.293998	-0.605550	0.077286
Kurtosis	1.342088	7.049709	2.024693	1.843921
Observation	34	34	34	34

Source: (Author's computation using E-view 12 software)

Appendix 4: Unit Root Test

ADF						
Constant Without Trends				Constant With Trends		
Variables	LEVEL	1st Different	Order of Integration	LEVEL	1st Different	Order of Integration
EGS	0.889	0.0001	I (1)	0.5354	0.0007	I (1)
GDP	0.009	0.0001	I (0)	0.0016	0.0002	I (0)
ICT	0.5834	0.0001	I (1)	0.5005	0.0003	I (1)
MC	0.2492	0.0000	I (1)	0.1749	0.0000	I (1)
PP						
EGS	0.8959	0.0001	I (1)	0.5002	0.0007	I (1)
GDP	0.0006	0.0000	I (0)	0.0009	0.0000	I (0)

ICT	0.4210	0.0000	I (1)	0.5592	0.0000	I (1)
MC	0.2735	0.0000	I (1)	0.1680	0.0000	I (1)

(Source: Source: Author's computation using E-view 12 software)

Appendix 5: ARDL Bound Test

F-Bounds Test	Null Hypothesis: No level relationship			
Test Statistic	Value	Signif	I(0)	I(1)
Asymptotic: n=1000				
F-statistic K	7.7121843	10%	2.37	3.2
		5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

(Source: Source: Author's computation using E-view 12 software)

Appendix 6: ARDL Long-run

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	1.03	0.55	1.86	0.05
GDP (-1)	0.34	0.16	2.09	0.04
EGS	0.15	0.07	2.07	0.04
ICT	-0.87	0.27	-3.14	0.00
MC	0.13	0.02	4.60	0.00

(Source: Source: Author's computation using E-view 12 software)

Appendix 7: Short-run ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	0.34	0.14	2.35	0.02
CointEq(-1)	-1.25	0.18	-6.64	0.00

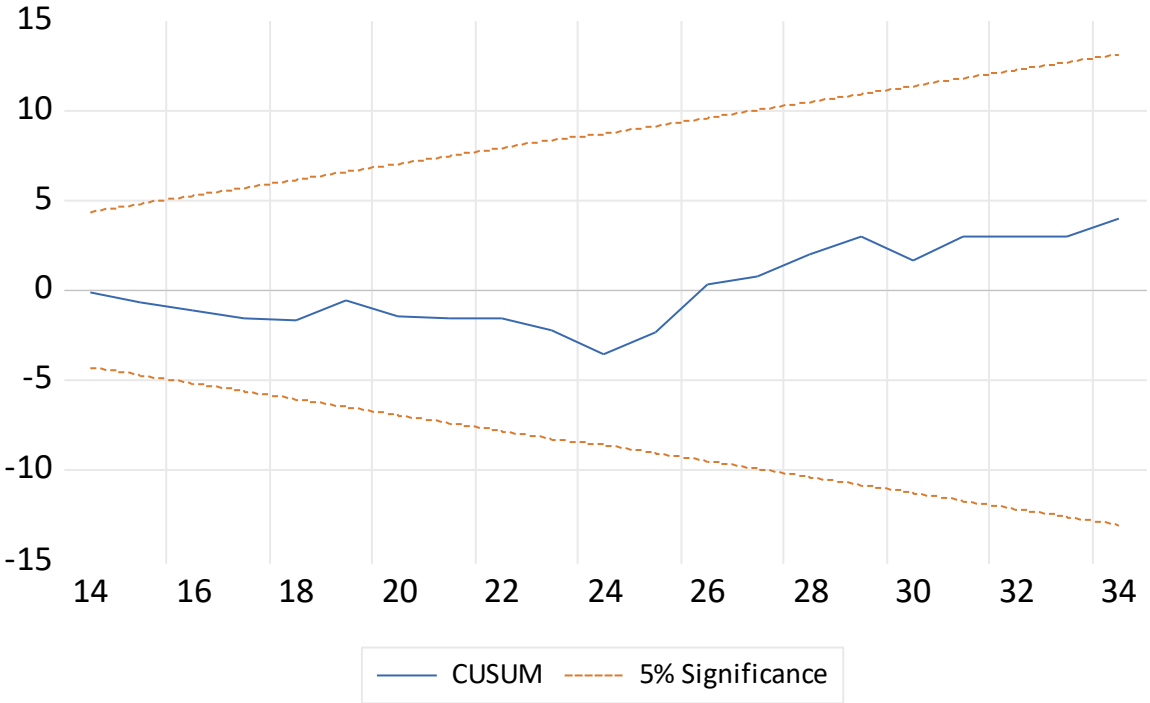
(Source: Source: Author's computation using E-view 12 software)

Appendix 8: Residual Diagnostic test result

Name of the Test	Null Hypothesis result	Statistics value	Probability
Serial Correlation Test	No serial correlation at up to 2 lags	0.268183	0.7676
Jarque-Bera (JB) Test	Residuals are normally distributed at a 5% level	1.728917	0.421280
White (CH-sq) Test	No conditional heteroscedasticity at 5%	2.287484	0. 0567

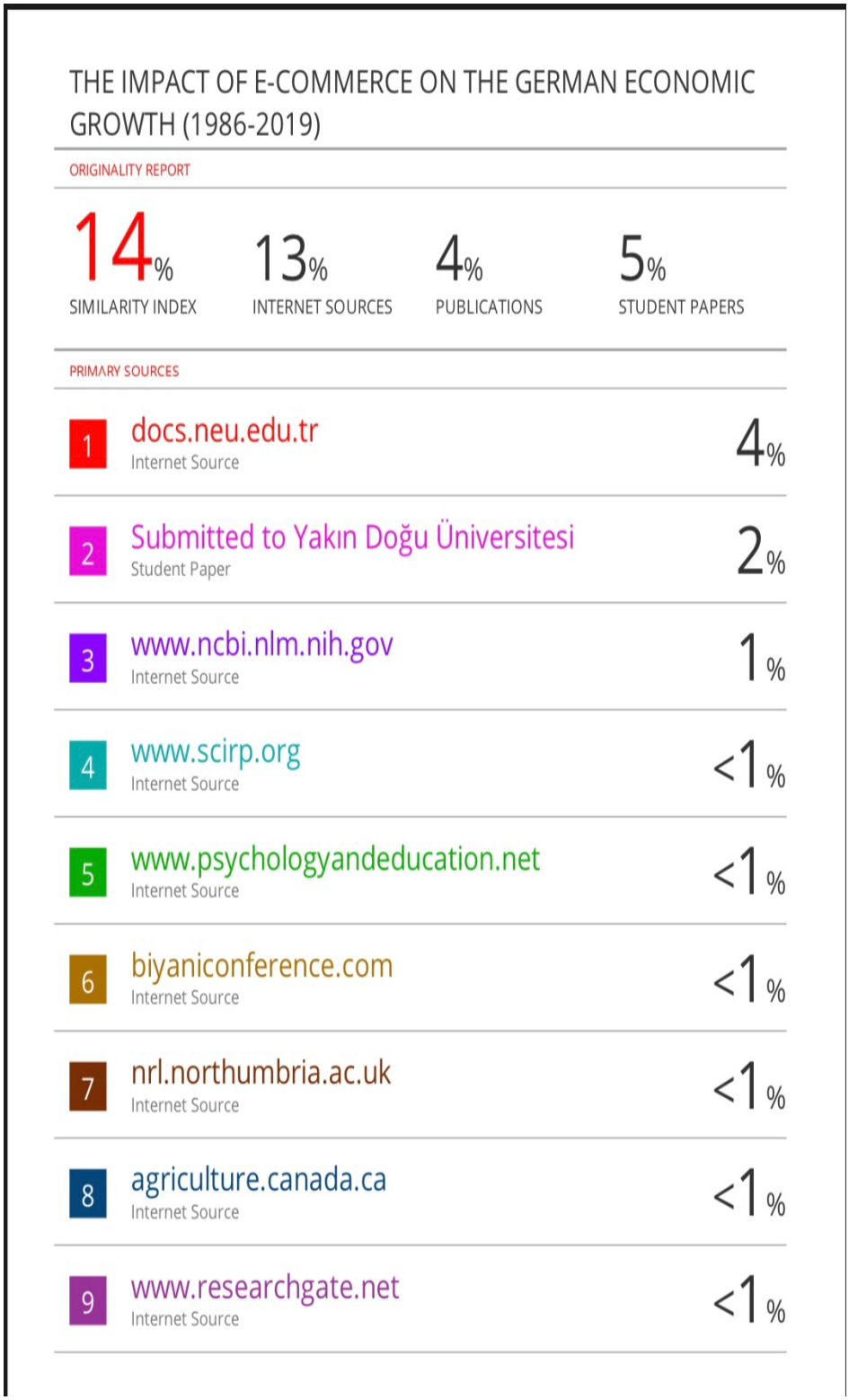
(Source: Source: Author's computation using E-view 12 software)

Appendix 9: TR Stability test



(Source: Source: Author's computation using E-view 12 software

Appendix 10: TURNITIN



THE IMPACT OF E-COMMERCE ON THE GERMAN ECONOMIC GROWTH (1986-2019)

ORIGINALITY REPORT

14%	13%	4%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	docs.neu.edu.tr Internet Source	4%
2	Submitted to Yakın Doğu Üniversitesi Student Paper	2%
3	www.ncbi.nlm.nih.gov Internet Source	1%
4	www.scirp.org Internet Source	<1%
5	www.psychologyandeducation.net Internet Source	<1%
6	biyaniconference.com Internet Source	<1%
7	nrl.northumbria.ac.uk Internet Source	<1%
8	agriculture.canada.ca Internet Source	<1%
9	www.researchgate.net Internet Source	<1%

Appendix 11: Ethical Committee Approval

YAKIN DOĞU ÜNİVERSİTESİ

BİLİMSEL ARAŞTIRMALAR ETİK KURULU

22.06.2022

Dear Joseph mc Kollie

Your project "The Impact of E-commerce on the German economic growth" has been evaluated. Since only secondary data will be used in the project it does not need to go through the ethics committee. You can start your research on the condition that you will use only secondary data.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee

Direnc Kanol

Note:If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document

Appendix 12

CV

JOSEPH M.C KOLLIE

Master's in Business Administration

CAREER OBJECTIVE

To work in an environment where my potential and capabilities will be developed and utilized toward the overall organization's aims and objectives.

• Motivated and well-coordinated individual seeking employment with a manufacturing company to help set production objectives and implement strategies to accomplish those goals. Maintaining, designing, and running production systems is something that drives me.

PERSONAL DETAILS

Date of Birth: 12/26/1992

Place of Birth: Lofa county

Marital status: Single

Nationality: Liberian

EDUCATION

Near East University
February 2021 - January 2023
Master's Business Administration
[Top 3% of graduating class with 3.00/4.00 CGPA.]

Liberia Institution of Public Administration
November 2019 – October 2020
Certificate in Monitoring and Evaluation(M&E)-

United Methodist University
August 2014-August 2019
Bachelor's Degree in Public Administration (BPA)
[Top 3% of graduating class with 3.00/4.00 CGPA.]

Young Men Christian Association (YMCA)
2015-2016
Certificate in Microsoft word

Monrovia Open Bible Standard School
2010-2014
High school Diploma

West African Senior School Certificate Examination

Address: Paynesville City,
Duport Road
Monsterrado county
Monrovia, Liberia

PHONE:
+231770957932/
+905391049728

WhatsApp: +905391049728

Facebook: Joseph m.c Kollie

EMAIL:
Josephkollie521@gmail.com

Leadership

2018: Weah For Clean City Project: Supervisor for District 11

2019: Co-Chairman on class night committee
United Methodist University Graduating class of 2019

Core Competence

- Microsoft Office Suites
- Financial Management
- Business Management
- Office Administration
- Business Development
- Strategy Management
- CRM
- Human Resource Management
- Customer Satisfaction
- Consumer Behavior
- Financial Analysis
- Marketing Management

WORK EXPERIENCE

Monrovia City Cooperation (MCC), Public Health Officer
August 2020–Present
Handled the day-to-day Nuisances in Monrovia City.
Abate nuisances and give penalties to violators.
Conduct Awareness about the cleanliness of the city and its surroundings

National Election Commission f Liberia, Data Clerk Entrance
October 2018–March 2019
Enter voter's registration into the NEC database

Lee Group of Enterprises, Weighing Bridge Clerk
March 2017–December 2018
I was responsible for the weighting of every rubber and preparing payment vouchers for customers

PROFESSIONAL SKILLS

- Experienced with office management software like MS Office.
- Effectively handle a broad range of diverse interpersonal contacts.
- Critical thinking skills and excellent written and oral communication skills.
- Active problem-solving, effective interpersonal skills, and strong multi-tasking skills.
- Excellent leadership, time management, and team management skills to effectively motivate others.

ACADEMIC PROJECTS

- **Master's Thesis** – The Impact of E-commerce on German's Economic Growth. From 1989-2019
- **Undergraduate Project** - The prevalence of sexual harassment at workplaces. A case study Ministry of Finance and Development Planning

PROFESSIONAL QUALIFICATION

- Strategy Management and customer relationship management (CRM)

Reference

Mr. Mohammed M. Bamba

Monrovia City Corporation

1st street sinkor

Administrative Assistant at the Lord

Contact: mohammco2smart@gmail.com/

+231776168098

Assist. Prof.Dr. Mehdi Seraj

Department of Economics
Near East University
Lefkosa, North Cyprus
Department of Economics
Contact: mehdi.seraj@neu.edu.tr/ +90 392

675 1000

Prof.Dr Serife Eyupoglu
administrative sciences

Dean, Faculty of Economics and

Chair, Department of Business

administration

Near East University
Lefkosa, North Cyprus
Contact: Serife.eyupoglu@neu.edu.tr/+90

675 1000