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Regional E-commerce Dynamics: Pakistan, India and Bangladesh in Comparison

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Abstract

The digital trade in Pakistan is rising due to change in consumers' preference to buy goods and services online. The objective is to analyze the impact of E-commerce factors on economic performance of Pakistan, India and Bangladesh by comparing their E-commerce dynamics and identifying key challenges. The approach used is quantitative based on secondary data facts, econometric modeling and cross cutting comparisons of the three countries. The first model analyzes the impact of digital payment infrastructure, research and development, gross national income, and internet penetration rate on E-commerce. The second model is based on the time series data of the three countries that includes GDP per capita (dependent) and gross capital formation, internet penetration, E-commerce transaction value, and trade openness as independent variables. The results show that the customers are inclined towards online buying and selling, but there are few constraints due to which they prefer physical shopping like internet connectivity issues. By consolidating the results of both the models, the results suggest the overhauling of digital infrastructure, improved logistics, consumer protection measures, data protection and telecommunication services. The research encourages the foreign investment in the technology sector of Pakistan to boost the digital trade in the country. Comparing the digital policies of India and Bangladesh, the importance of digital policy for Pakistan and associated transformation benefits has increased. The internet infrastructure should be one of the foremost concerns of the digital policy.

Keywords: E-commerce, Digital Trade, E-commerce Policy, Customer Satisfaction, Internet Infrastructure.

JEL classifications: L81, L86, L26, C82

1. Introduction

The world is pacing rapidly and the dynamics of the businesses are changing. The technology is evolving at a fast pace, thereby changing the traditional business model. The classical nature of business has been transformed into an online market, through which people can buy and sell products online. The E-commerce market was still in place before Covid-19, but this virus was actually a blessing in disguise, as it helped the online business to boom at the world stage. The traditional style of doing business has its own pros and cons, but electronic commerce changed this style into a technology oriented market. During Covid-19, the E-commerce market expanded rapidly. The prime reason was that the lockdown in major cities disrupted the daily activities. The standard operating procedures and restrictions were also imposed, which forced the people to remain at home and the online buying and selling

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increased. This change facilitated the producer, the consumer and the market. According to the statistics, Global electronic commerce has been rising exponentially, having above $25 trillion sales in 2015[3]. It is forecasted that the E-commerce sales will grow by $3 trillion from 2021-2027. The total share of electronic commerce in global GDP was around 3% in 2015, while it was 4% in Asia Pacific, while North America and Europe were having 3% and 2.6% respectively (United Nations Conference on Trade and Development (UNCTAD), 2017).

The electronic commerce is the now becoming future of businesses, which can change the economic dynamics of a country, especially the developing countries. The research is quantitative and secondary data based comparative analysis related to E-commerce, thereby finding the loopholes and prospects of the existing E-commerce business of Pakistan and the E-commerce policy. Along with infrastructure, the availability of reliable logistics support and the efficient payment gateways are important for E-commerce business. In Pakistan, due to limited digital infrastructure the international fin-tech companies are reluctant to initiate their operations in Pakistan and avoid the risk of money laundering. These problems are compared with the latest policies and implementation mechanism of India and Bangladesh, so that the policy can be practically implemented.

The main objective of this research is to analyze the impact of E-commerce factors on economic performance of Pakistan, India and Bangladesh by comparing their E-commerce dynamics and identifying key challenges. This research is significant as it aligns with the government's new initiative of URAAN Project, which focuses on developing Pakistan's digital economy especially E-commerce. URAAN aims to focus on digital infrastructure, facilitate regulatory environment, and support new startups in the E-commerce sector. The paper is organized as follows: Section 2 reviews the literature, section 3 displays the research methodology, section 4 reveals the empirical findings, section 5 discusses the findings while chapter 6 concludes and gives recommendations.

2. Literature Review

The E-commerce related literature has been consulted in detail. The policy documents and digital trade research papers of Pakistan, India, and Bangladesh have been thoroughly analyzed, so that the shortcomings can be solved by giving policy recommendations.

Electronic commerce decreases the barriers of trade which are apparent in a traditional business. E-commerce is playing a big role for the countries' good economic performance (Javed, 2020). The popularity of electronic trade is rising rapidly. The reason for its expansion is its ability to improve digital economies and create new jobs which will ultimately help the developing economies to minimize their development gaps and the division among the rural and urban population (Asian Development Bank, 2021).

2.1 E-commerce Policy and Country Comparisons

India's latest E-commerce policy was published in 2022. The main factors of this policy were the same as of Pakistan's policy, but the major focus was to break the monopoly power of foreign E-commerce companies and enhance the capabilities of domestic E-commerce Industry (Raghuraman, 2022). In the last few years, Indian E-commerce has been progressing quite rapidly. Due to demographic dividend and rising internet access, the electronic commerce is reaching new heights. However, despite the success of electronic commerce in India, there are some challenges like privacy problems, lack of skills, and the trust factor of consumers in E-commerce. The absence of cyber laws is also the major issue in the current

[3] Digital Economy Report 2021

E-commerce framework. However, with the passage of time, the new laws are being introduced which will solve the problems associated with E-commerce (Suryawanshi, 2017).

In comparison with Pakistan and India, Bangladesh E-commerce policy was devised in 2018. The key differences in this policy are the encouragement of women entrepreneur in E-commerce businesses and protecting the rights of the domestic E-commerce industry (Government of Bangladesh - Ministry of Commerce, 2018). The major objectives of the National Digital Commerce Policy 2018 of Bangladesh include the promotion, expansion, and development of E-commerce, while ensuring a compatible environment for electronic business. The major challenges of Bangladesh E-commerce include the high-cost internet, privacy issues, lack of computer related training, poor knowledge of marketing, political issues, and lack of experience in doing digital trade. In the initial stage, the digital trade business can be given incentives such as tax exemptions (Ohidujjaman, Hasan, & Huda, 2013).

Pakistan's first E-commerce policy was devised in 2019, in which the primary focus was on the nine main factors. These factors include Regulatory Environment, Digital and Payment Infrastructure[4], Empowerment of Youth, Taxation, Consumer Protection, Telecommunication Services, Logistics, Data Protection, and Global Connectivity (Government of Pakistan - Ministry of Commerce, 2019). This policy's main purpose is to create an environment, which can be suitable for the electronic commerce in Pakistan. In Pakistan this industry has been rising rapidly showing worth of about Rs.52 billion in fiscal year 2017, while growing to around Rs.100 billion, showing growth of above 90% in 2018. The online buying and selling sales revenue in Pakistan was estimated at about $4 billion in 2020, which was placed at 46th position all over the world in online businesses (Zia, Sajid, & Siddique, 2022). This online buying and selling of the products can lead to low cost of production including direct and indirect costs, which can be very fruitful for a developing country like Pakistan.

2.2 Electronic Commerce

Despite the emergence of E-commerce policies, the E-commerce business is a challenge for many countries due to its inherent problems. The major problem includes the payment issues, in which the people are unable to pay in the foreign countries. If somehow payment platform is available, then such platform is very slow due to lack of digital infrastructure. The world's largest digital payment method 'PayPal' is not currently present in Pakistan. There are several other payment methods available such as debit/credit cards, prepaid cards, and mobile wallets (Anjum & Chai, 2020), but due to lack of massive digital infrastructure, such payment methods face various issues during online transactions. Online shopping adaptation is also the hurdle for the people in Pakistan due to lack of digital knowledge and procedures. Despite the growing revenues of E-commerce in Pakistan, people generally do not prefer to buy the products online. There are various factors that can affect the consumers' online shopping behaviors, such as time, brand quality, security/privacy risk, and price (Sattar & Ameer, 2014).

[4] Digital technologies that show the information technology and operations of an organization, such as Online Websites Portals, ATM Cards, Debit/Credit Cards, Fintech Companies, Paypal, Wise, and Payoneer.

The comparison shows that the Internet Penetration[5] rate in Pakistan in 2014 was only 15%, while in India, it was at 20%. Other countries such as Turkey showed the rate at 57%, while Denmark's Internet Penetration rate was about 97%, which was the highest in the world in 2014 (Sheikh & Basti, 2015). If we compare Pakistan with India, the economy of Pakistan is way behind India in E-commerce. Pakistan is lagging behind India in variables such as Processing at Customs, Logistics Infrastructure, and International Shipments Performance (Karachi Chamber of Commerce and Industry, 2019). The rank of Pakistan in UNCTAD B2C E-commerce index[6] is 120, while India is at 83. The major difference between Pakistan and India is the human capital. The Human Capital Index 2017 ranks Pakistan at 134th, while India at 115th.

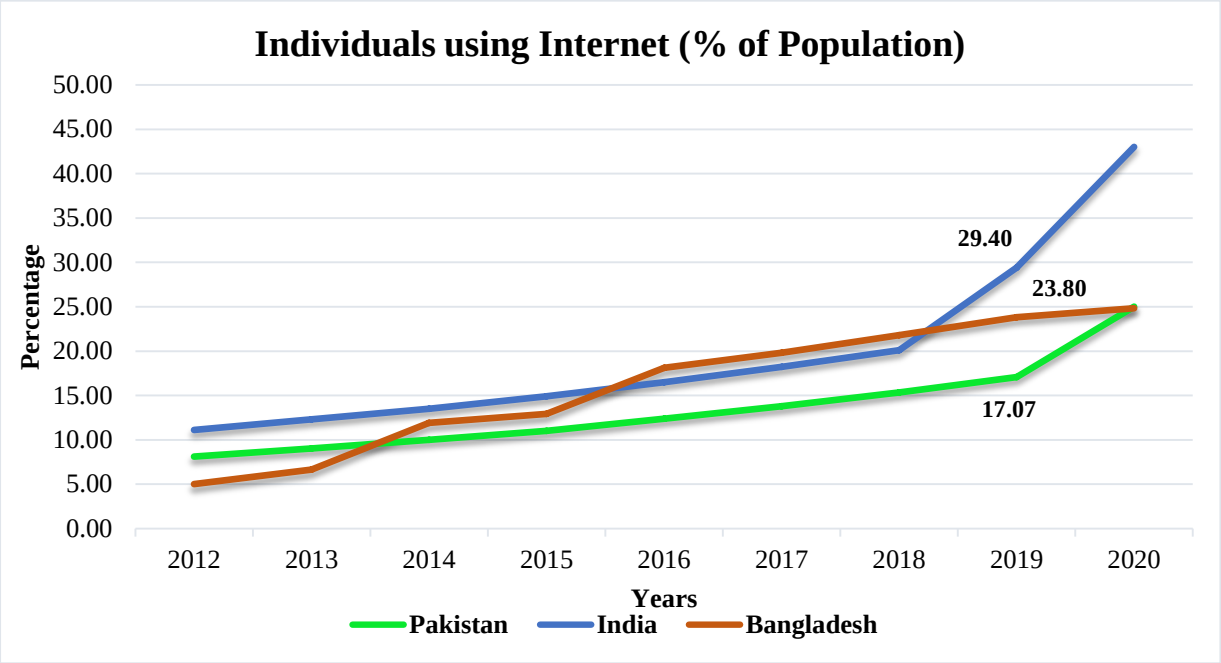

Figure 1: Individuals using Internet (% of Population) (2012-2020) (Pakistan, India, Bangladesh)

Source: (World Bank, 2020)

Another major problem is the logistics barrier in E-commerce industry of Pakistan. The supply of the goods at the designated places requires costs and human resources. The ranking of Pakistan in Logistics Performance Index is 122, which is the lowest in South Asia (Shaikh, 2022). The elements of Logistics include Infrastructural Capacity, Institutional Capacity, and Industrial Capacity. Pakistan courier and logistics enterprises can benefit from the China Pakistan Economic Corridor, which is providing massive opportunities to enhance the supply chain using road links in neighboring countries.

The literature review shows that there is not enough research work done for the electronic commerce business in Pakistan. The electronic commerce is solely dependent upon the availability of reliable internet connection. The E-commerce business opportunities have also encouraged the youth and women to become entrepreneurs. This evolutionary process will not only solve the problems associated with it, but it will also boost the economy of Pakistan in terms of foreign exchange reserves.

[5] Internet Penetration Rate shows the portion of the population that has access to the internet facility.
[6] E-commerce Index shows an economy's readiness to support E-commerce development.

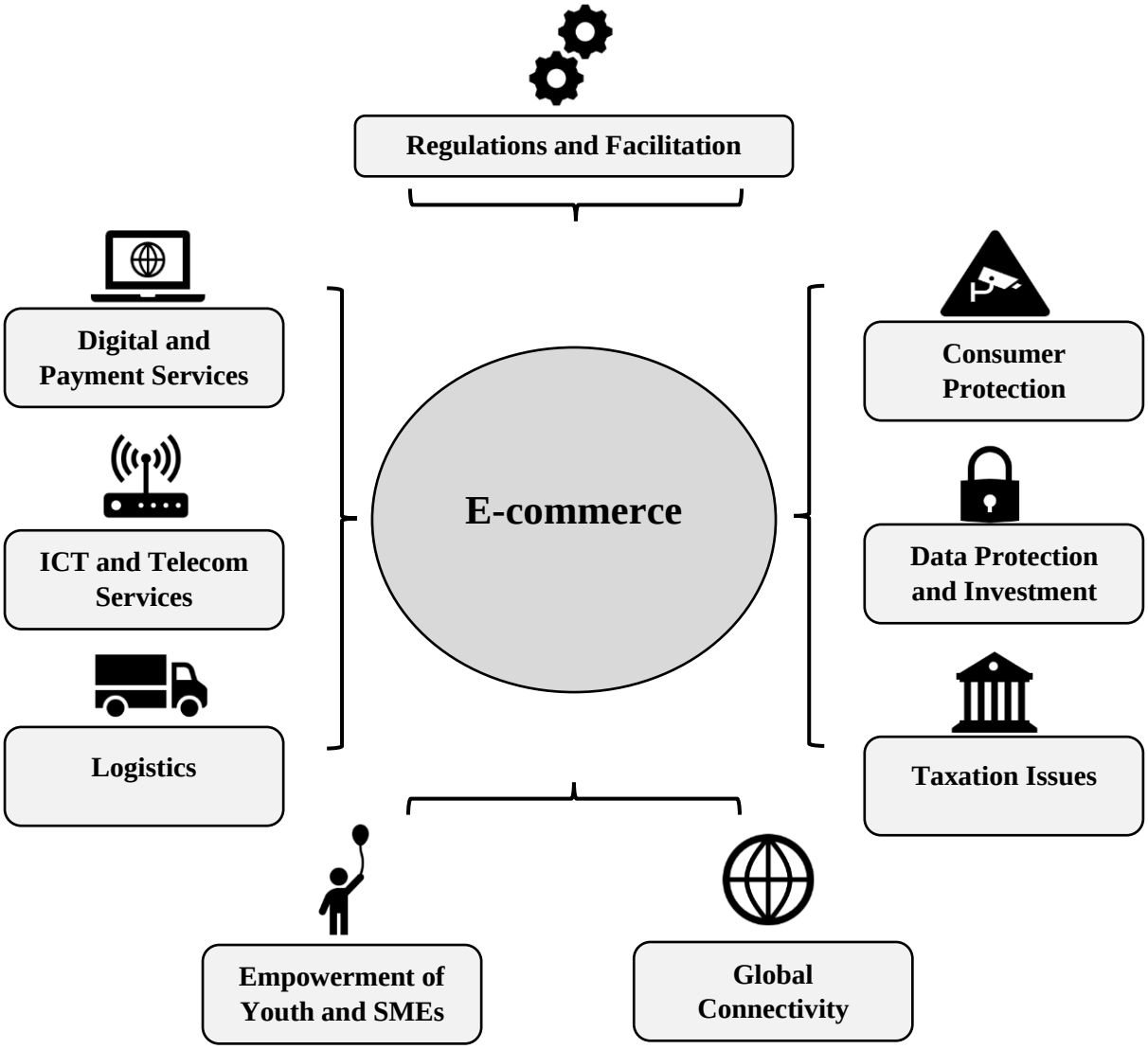

Figure 2: Conceptual Framework

Source: Author's contribution

The critical assessment of the E-commerce policy of Pakistan in comparison with India and Bangladesh has not been done before, because the first ever E-commerce policy was introduced in September 2019. The work done by (Sheikh & Basti, 2015) shows the customer satisfaction level in 2015, which was about Pakistan and Turkey. However, due to rapid expansion of advanced technology and internet connection, there is no mechanism that can check the current satisfaction level of customers, which are doing E-commerce business. The significance of this research is evident because of the large scope of electronic commerce, not only for Pakistan but also for the world. The digital technology has changed the ways of doing business. The artificial intelligence, digital marketing, social media, and data analytics have changed the business operations of an entity.

From the official statistics, it can be inferred that the in the near future, the traditional modes of doing business will become obsolete, while the internet linked businesses will be preferred. The rising internet connectivity and smartphone adoption would be the major drivers of growth in the digital trade. This research paper is certainly beneficial for the policy makers as the technological infrastructure factor is of the prime importance and Pakistan must change its business operations by using latest technology, just like the developed countries are doing. The research on the electronic commerce is expected to improve the basic foundations of the policy framework as recently identified in government's URAAN initiative.

3. Research Methodology

3.1 Theoretical Foundations

The theoretical framework of the two research models has been made by studying various theories related to customer experiences, which will eventually be used to shape the E-commerce policy of Pakistan. There are many studies that focused on the use of Information and Communications Technologies in business, but the most appropriate study is the (Schreyer, 2000), which deals with the contribution of technology to economic growth. The use of technological factor in an econometric model can also be traced back to the industrial revolutions. Currently, the use of Artificial Intelligence and Robotics justified the emergence of the fourth industrial revolution.

Another important model is the Diffusion of Innovation Model developed by E.M. Rogers in 1962, which explained how an idea gains popularity and spreads in a social system. It is studied by (Pease & Rowe, 2005), which concluded that there are various factors that contribute to the adoption of E-commerce business by the small and medium-sized enterprises. The Technological Acceptance Model 1989 is also an important model, which focused on the perceived ease of use, usefulness, and the actual behavior of the people in a social system. The study conducted by (Fayad & Paper, 2015) showed the extension of the technological acceptance model by measuring the actual behavior of people in adapting the E-commerce business.

3.2 Data and Research Framework

The quantitative research approach has been used for the data collection to analyze the impact of E-commerce on independent variables. Data are log transformed as this transformation solves the issue of heteroscedasticity and it becomes easier to interpret and compare when economic variables are taken. The first model uses panel data of Pakistan, India, and Bangladesh. The data was collected from various secondary sources and then the impact of independent variables upon dependent variable has been determined using the methodology of (Ortiz, Rodriguez, & Gomez, 2020). The second model is based on time series data and it compares the three countries' E-commerce profile with their respective GDP per capita. The methodology of this model is applied using the study done by (Zatonatska, 2018).

The research strategy is based on secondary data facts and quantitative data. In the first place, the regulatory bodies such as the Ministry of Commerce and other private entities[7] are visited to get the secondary data and information. Secondly, those enterprises are contacted which are currently doing business in E-commerce. The online E-commerce markets such as Daraz, Amazon, Walmart, and Shopify websites are also visited in comparison with the local E-

[7] Entities related to E-commerce like "Extreme Commerce" and "Enablers".

commerce stores of Pakistan. Their sales, payment gateways, logistics, digital infrastructure, and telecommunication services are studied, so that the key issues can be found.

4. Empirical Findings

4.1 Model 01 (Panel data approach)

The following model is used for all the three countries.

$$\textbf{Model 01: } EC_{it} = \text{constant} + \beta_{0it} + \beta_{1i}MCS_{it} + \beta_{2i}RD_{it} + \beta_{3i}GNI_{it} + \beta_{4i}Po_{it} + \varepsilon_{it}$$

The following table 1 shows the results of descriptive summary. The dependent variable is the E-commerce value, while the independent variables are mobile cellular subscriptions, research and development, gross national income, and Internet Penetration.

Table 1: Model 01 Descriptive Summary

Estimation Sample regress **Number of Observation: 72**				
Variable	**Mean**	**Std. Dev.**	**Minimum**	**Maximum**
LN E-commerce(Value)	5.272	3.676	-5.703	11.372
LN Mobile Cellular Subscription	3.136	1.837	-1.616	4.736
Research & Development	0.419	0.235	0.115	0.858
LN Gross National Income	12.896	1.077	11.365	14.991
Internet Penetration rate	7.888	15.143	0	48.700

The Augmented Dickey Fuller test is applied first with level and then with first and second difference. The augmented dickey fuller probability shows the unit root existence in the series.

Table 2: Model 01 Unit Root

Variable	**Level**		**First Difference**		**Second Difference**	
	ADF Statistic	**Probability**	**ADF Statistic**	**Probability**	**ADF Statistic**	**Probability**
E-commerce Transactions	3.667	0.721	21.748	0.001		
Mobile Cellular Subscriptions	22.686	0.000				
Research and Development	2.718	0.843	10.489	0.105	38.953	0.000
Gross National Income	1.243	0.974	20.196	0.002		
Internet Penetration	0.22072	0.9998	9.70328	0.1377	54.4772	0.0000

From the Unit root tests, we know that the variables are stationary at level and first difference, and then the autoregressive distributed lag model (ARDL model) will be applied to find the co-integration among the variables. The ARDL approach is applied on the basis of automatic selection of 4 lags, while the standard lag length criteria is followed by Akaike info criterion (AIC). The model is explained by the value of R-squared which is 0.99, showing that the 99% variation is explained in determining the E-commerce value. The value of Durbin Watson test also shows the absence of autocorrelation. The results show that the gross national income, mobile cellular subscriptions, research and development, and Internet Penetration have a positive relation with E-commerce transactions value.

Table 3: ARDL Approach Based Results

Dependent Variable: LN_EC				
Method: ARDL				
Variable	**Coefficient**	**Std. Error**	**t-Statistics**	**Prob.***
LN_EC(-1)	0.918	0.015	60.704	0.000
LN_GNI	1.074**	0.207	5.167	0.000
LN_GNI(-1)	-0.992**	0.223	-4.440	0.000
LN_MCS	0.596**	0.075	7.871	0.000
LN_MCS(-1)	-0.503**	0.067	-7.488	0.000
RD	1.458**	0.807	1.805	0.075
RD(-1)	-1.212	0.876	-1.384	0.171
INT_	0.007**	0.002	2.477	0.016
C	-0.948	0.933	-1.015	0.313
R-squared	0.995			
AIC	0.252			
DW Test	1.920			

****5% Level of Significance**

All these independent variables show the probability value less than 0.05, thereby showing significant relationship. The dependent variable E-commerce will increase when the gross national income rises. The mobile cellular subscription also shows that E-commerce will increase by 59%. The research and development also depict the positive relationship. The Internet Penetration, which is used as policy variable shows that the E-commerce value will increase by 0.007, if the relevant policy is implemented, while ensuring the internet infrastructure in the respective country (Ortiz, Rodriguez, & Gomez, 2020).

The bound test is applied on the model which explains the long run relationship between the variables. The f-statistics value shows that it is 9.57, which is greater than the value of upper bound limit, thereby rejecting the null hypothesis of no relationship. This proves that the variables show co-integration and have long-run relationships.

Table 4: Bounds Test

Null hypothesis: No levels relationship				
F-Bounds Test	**Value**	**Significance Level**	**Lower I(0)**	**Upper I(1)**
		10%	2.2	3.09

F-statistics	9.575	5%	2.56	3.49
k	4	2.5%	2.88	3.87
		1%	3.29	4.37

4.2 Model 02 (Time Series Approach)

The following model is used for all the three countries by using time series data.

Model 02: $\ln GDP\ PC_{it} = \beta_{0it} + \beta_{1i} \ln GCF_{it} + \beta_{2i} \ln IP_{it} + \beta_{3i} \ln Ecom_{it} + \beta_{4i} TO + \varepsilon_{it}$

The model 02 is used to check the relationship between the GDP per capita of Pakistan, India, and Bangladesh with their respective E-commerce value. The GDP per capita is used as dependent variable, while the independent variables include gross capital formation, Internet Penetration rate, E-commerce transactions value, and trade openness. Simple least square technique is applied to find the relationship between the variables.

The figure 3 shows the GDP per capita of Pakistan, India, and Bangladesh. It can be seen in the figure that from year 2010, the per capita GDP of India was the highest, followed by Pakistan and then Bangladesh. Due to technological advancements in all countries, the internet played a major role in changing the dynamics of trade and investment. This change ultimately impacted the per capita GDP of the three countries. In year 2022, the per capita GDP of India was again the highest, followed by Bangladesh and then Pakistan.

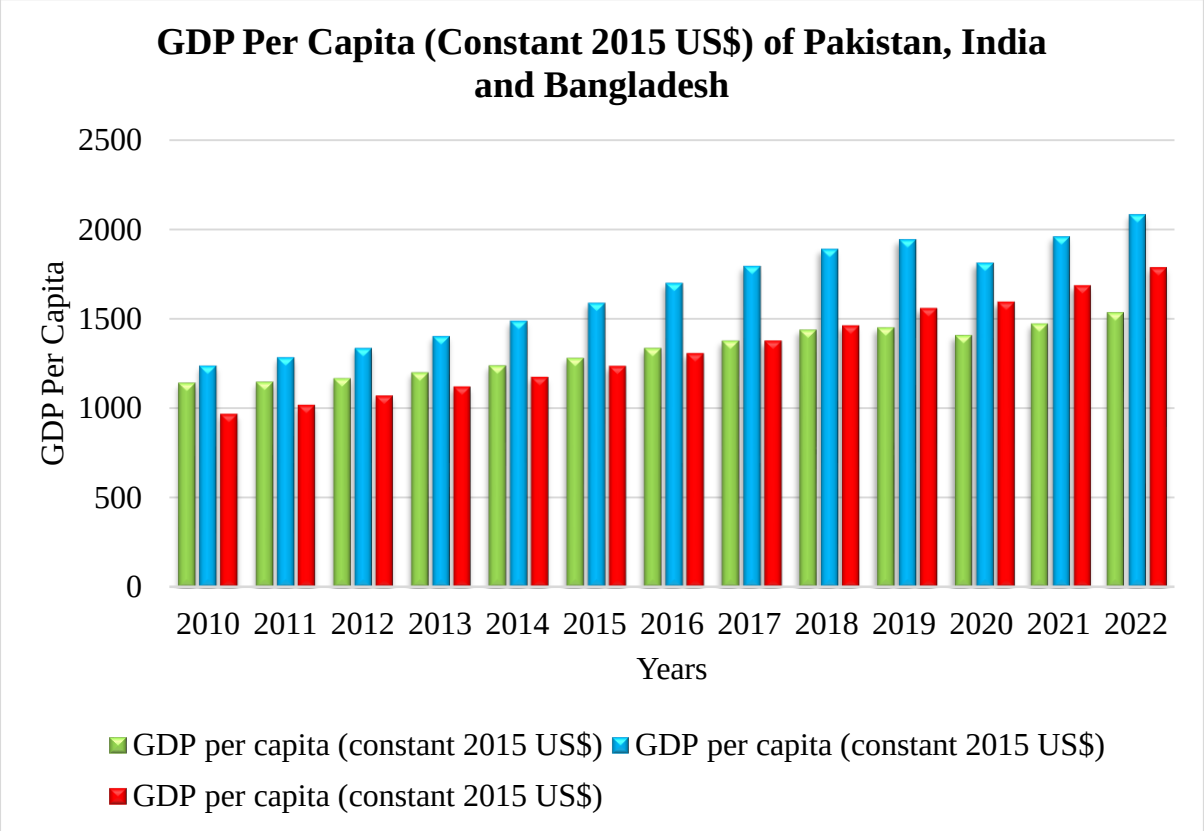

Figure 3: GDP Per Capita of Pakistan, India, and Bangladesh

Source: (World Bank, 2020)

The Augmented Dickey Fuller test is applied first with level and then with first and second difference. The Augmented Dickey Fuller probability shows the unit root existence in the series. The series is tested on the first and second difference.

a. Model Results for Pakistan

The following table shows the results of the second model of Pakistan, in which the dependent variable is the GDP per capita, while the independent variables are E-commerce value, gross capital formation, Internet Penetration, trade openness. The results show that all the variables have a positive relationship with GDP per capita except the trade openness. The trade openness is the only insignificant variable having a negative relationship with the GDP per capita.

Table 5: OLS for Pakistan

Dependent Variable: LN_GDP_CAPITA				
Method: Least Squares				
Variable	**Coefficient**	**Std. Error**	**t-Statistics**	**Prob.***
C	0.324985	1.256403	0.258663	0.7992
IN_LN_ECOM	0.008806	0.005004	1.759899	0.0975
IN_LN_GCF	0.262480	0.051958	5.051771	0.0001
IN_LN_INT	0.122798	0.018950	6.480193	0.0000
IN_LN_TO	-0.073718	0.042910	-1.717980	0.1051
AR(1)	0.288854	0.041775	6.914503	0.0000
R-squared	0.989338			
DW Test	2.007916			

Various studies show that the relationship between the GDP per capita and trade openness is positive such as (Dollar, Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 LDCs, 1992), (Dollar & Kraay, Trade, Growth and Poverty, 2004), and (Sachs & A, 1995). However, the sign of the relationship between trade openness and GDP per capita is ambiguous, as various studies could not find solid evidence (Rodriguez, 2007). Although, it has determined that assuming all other things constant, countries that have low GDP per capita are likely to grow faster than the countries having high GDP per capita (Vehapi, Sadiku , & Petkovski, 2015). The Durbin Watson test also indicates that there is no autocorrelation in the model.

b. Model Results for India

Table 6 shows the results of the second model in which the dependent variable is the GDP per capita, while the independent variables are E-commerce value, gross capital formation, Internet Penetration, and trade openness. The results show that all the variables have a positive relationship with GDP per capita except the trade openness. The Internet Penetration variable shows a positive relationship, but it is insignificant. The reason includes that the Internet Penetration might not be as significant as other variables' significance to the variable

of GDP per capita, though they depict positive relationship. It means with an increase in the value of people using the internet, the per capita GDP will also rise.

Table 6: OLS for India

Dependent Variable: LN_GDP_CAPITA				
Method: Least Squares				
Variable	**Coefficient**	**Std. Error**	**t-Statistics**	**Prob.***
C	-0.788569	1.991043	-0.396058	0.6976
IN_LN_GCF	0.255050	0.075049	3.398446	0.0040
IN_LN_INT_	0.038690	0.036525	1.059286	0.3062
IN_LN_TO	-0.269516	0.054331	-4.960645	0.0002
LN_IN_ECOM	0.091420	0.018081	5.056158	0.0001
AR(1)	0.424530	0.263338	1.612109	0.1278
AR(2)	-0.643621	0.417009	-1.543423	0.1436
SIGMASQ	0.000526	0.000189	2.776039	0.0141
R-squared	0.995012			
DW Test	2.182989			

Author's Own Calculation

The trade openness is the significant variable having the negative relationship with the GDP per capita. The sign of the relationship between trade openness and GDP per capita is ambiguous, as various studies could not find solid evidence of being in a positive relationship (Rodriguez, 2007). Although, it has been determined that assuming all other things constant, countries that have low GDP per capita are likely to grow faster than the countries having high GDP per capita (Vehapi, Sadiku , & Petkovski, 2015). The Durbin Watson test also indicates that there is no autocorrelation in the model.

c. Model Results for Bangladesh

The following table shows the results of the second model of Bangladesh in which the dependent variable is the GDP per capita, while the independent variables are E-commerce value, gross capital formation, Internet Penetration, and trade openness. The results show that the all the variables have a positive relationship with GDP per capita except the trade openness and Internet Penetration. The E-commerce value variable shows a positive relationship, but it is insignificant as its probability value is greater than 0.05. It means that in this model, the E-commerce transactions value does not play a significant role for the GDP per capita.

Table 7: OLS for Bangladesh

Dependent Variable: LN_GDP_CAPITA				
Method: Least Squares				
Variable	**Coefficient**	**Std. Error**	**t-Statistics**	**Prob.***
C	-7.057480	1.529084	-4.615496	0.0003
IN_LN_GCF	0.568762	0.066674	8.530504	0.0000
IN_LN_INT_	-0.001236	0.017131	-0.072123	0.9434
IN_LN_TO	-0.038228	0.034531	-1.107056	0.2846

LN_IN_ECOM	0.011431	0.019410	0.588899	0.5642
AR(1)	0.596405	0.282556	2.110753	0.0509
SIGMASQ	0.000110	4.06E-05	2.717140	0.0152
R-squared	0.998905			
DW Test	1.811863			

Author's Own Calculation

The positive relation between Internet Penetration shows that the increase in the number of people using the internet will cause the per capita GDP to rise. The trade openness is the insignificant variable having the negative relationship with the GDP per capita. The sign of the relationship between trade openness and GDP per capita is ambiguous, as various studies could not find solid evidence of being in a positive relationship (Rodriguez, 2007). Although, it has determined that assuming all other things constant, countries that have low GDP per capita are likely to grow faster than the countries having high GDP per capita (Vehapi, Sadiku , & Petkovski, 2015).

5. Discussion

The two models depict the comparative assessment of E-commerce of Pakistan, India, and Bangladesh. Through digital technology, the trade has revolutionized, creating ample opportunities for the unemployed people also. The results showed the current status of digital trade in Pakistan, which will help to address the challenges encountered during the buying and selling of the products online.

Regulatory and Facilitation Environment: The regulations are used to guide businesses to earn profit. The facilitation environment is necessary to boost up the trade in the country. There are various stakeholders that are interested in this E-commerce policy of Pakistan. These include freelancers, business owners, industries, financial institutions, revenue authorities, small medium enterprises, and the consumers. These stakeholders are greatly influenced by the E-commerce policy. Pakistan's first E-commerce policy was introduced in 2019 (Government of Pakistan - Ministry of Commerce, 2019). This policy made a national E-commerce council for dealing the operational matters of the digital trade. This council will provide the facilitation to encourage the youth and women entrepreneurs to focus on the digital trade in Pakistan.

Apart from this, the E-commerce is treated under the domain of traditional commerce in terms of regulations. The E-commerce must be separated from the traditional commerce, as there are a lot of issues in carrying out the digital trade under these conditions. The most important one is the lack of digital infrastructure.

In Indian E-commerce policy (Raghuraman, 2022), the major focus is given on the local businesses instead of foreign markets. The Indian government criticized the foreign E-commerce markets a lot, which paved the way to regulate the entire E-commerce industry. The foreign market players exploit the rules to gain an advantage over the local market. If we compare such techniques with Pakistan, Pakistan is lacking in the policy framework and implementation. The digital landscape in Pakistan is not as broad as in India, as the people still prefer to do business in foreign markets as compared to the local markets due to lack of trust on government and regulatory bodies. If compared with Bangladesh E-commerce policy, the major concern is again curbing the exploitation of local industries. The foreign investors are allowed to do business in Bangladesh, but they are only restricted to China, so

that the local industry can be prioritized first (Government of Bangladesh - Ministry of Commerce, 2018).

Financial Inclusion and Digitalization through Payment Infrastructure Development: The financial inclusion and digitalization through payment infrastructure development are one of the foundational steps to reach the peak of the digital trade. The internet is the one element that provides the solid base to start the E-commerce. Pakistan is lacking in digital infrastructure due to lack of digital knowledge and ideas in the top offices of government. The lack of digital knowledge can be justified by the lack of budget and investment in the digital sector of Pakistan. The E-commerce policy of Pakistan puts special emphasis on this factor. This policy's main aim is to enable the financial institutions to cater for electronic transactions and encourage the new players into the market of digital technology. Its secondary aim is to discourage the cash on delivery payment method and include only the digital payment methods such as debit/credit card payments, and jazz cash/easy paisa payments.

Sadapay is an example of the financial institution operating in Pakistan that ensures the smooth transfer of money from one place to another. The developed cities of Pakistan have already got good internet connections, but the digital infrastructure must be developed in remote areas, so that the remote villages can also get benefit from these facilities. The State Bank of Pakistan RAAST payment system is an example through which the instant digital payments can be achieved. It can enable end-to-end digital payments among consumers, business entities, and government organizations instantly (State Bank of Pakistan, 2021). It can provide enhanced security, low-to-no transaction costs, full sector-wide interoperability, and customer-centric innovative products and services.

Indian E-commerce introduced India's newest and most ambitious initiative, known as 'The Open Network for Digital Commerce' (ONDC), that aims to decrease the digital monopolies and make the digital trade industry more inclusive for both the buyers and sellers (Raghuraman, 2022). This initiative would establish common interoperable frameworks and protocol that can facilitate the buyers and sellers to operate across different E-commerce platforms. Pakistan's E-commerce landscape must establish such kind of open network that can facilitate both the buyers and sellers without any hurdle during digital payments. In Bangladesh, the digital trade is growing at a much faster rate than other countries. Their digital landscape also focuses on the inclusion of efficient financial institutions such as 'Paypal', so that the digital payments issues can be solved.

Global Connectivity and Multilateral Negotiations - World Trade Organization Work Program on Electronic Commerce: This factor is also paramount for the implementation of successful E-commerce policy. The digital commerce trends' on which the current global community is working must also be carried out in Pakistan. The policy makers should put a greater emphasis on the recent multilateral negotiations happening around the world, so that such changes can be brought forward to home country. The global connections between the countries must be increased, as this can solve the problems of each country doing the trade.

The World Trade Organization has made a system of agreements, through which it can liberalize the international trade. It provides the legal architecture on how to liberalize the international trade. These discussions are happening in two parallel tracks. The WTO Work Program on Electronic Commerce (WPEC) was started in 1998. It was based on the non-negotiating and exploratory nature discussions. The second is the Joint Initiative (JI) on electronic commerce, which focuses on the binding agreement among its members. In 2017,

the 11th Ministerial Conference was held, in which the Joint Initiative was made to solve the issues in electronic commerce. The initiatives also focused on the investment facilitation and domestic regulations of the member countries. The themes involved in these initiatives include enabling electronic commerce, openness and E-commerce, trust and E-commerce, cross-cutting issues, telecommunications, and market access (Digital Watch, 2020).

The extensive discussions were held in the WTO 13th Ministerial Conference, March 01, 2024. These discussions reached an agreement that the custom duties must be prohibited temporarily to encourage the electronic commerce among the member states. However, India wanted to re-examine the implications of the moratorium, especially in the case of developing and least developed countries. The 13th Ministerial Conference focused on the dedicated discussions on E-commerce topics and issues. The impact of custom duties was also analyzed especially to maintain a level playing field for both the developed and less developed countries. The Conference also addressed the challenges in the digital trade. It highlighted the collaboration among the member countries to solve the problems in digital trade (Thomson Reuters, 2024). The General Council of WTO has been given a task to conduct periodic reviews of this work program. All the member nations also agreed to maintain the current practice of not imposing custom duties until the 14th Ministerial Conference.

The developing countries such as Pakistan and Bangladesh, want to get their digital problems solved using WTO negotiations. The major reason to join these negotiations is to control the unnecessary regulations of the government in the digital trade. However, India showed its concerns of using unrestricted access to data. Due to this reason, India chose not to align itself with these negotiations. The concern of India shows that the developing countries need policy space in ownership and use of data in cloud computing, artificial intelligence, and data storage.

However, there are various disadvantages as well that need to be addressed. Due to market access, the competitive pressure can phase out the local industry which might be harmful for the country's economic growth. The regulatory burden is also a challenge in Pakistan digital trade. The compliance in these negotiations may bind the producers and service providers, which can affect the electronic commerce. Such negotiations can provide benefits to urban areas as compared to rural areas due to the digital divide in the country. Despite these challenges, joining these negotiations will benefit Pakistan in long term. It can provide solutions to the challenges related to digital trade. The digital infrastructure can be improved which will undoubtedly benefit overall economy of Pakistan.

Consumer Protection in the Digital Environment: The success of an E-commerce business largely depends on the protection of consumers' data in the digital environment. The confidence of the consumers on the current digital market framework is not sufficient. The consumers must be given reliable framework, so that they can be protected from online fraudulent activities. The general awareness must be raised so that the consumers can know about their rights of protection. The E-commerce policy of India and Bangladesh specifically focused on the consumers in the domestic market as compared to foreign investors. A solid dispute resolution mechanism should be built up to address the concerns of consumers regarding their grievances.

Information and Communication Technologies (ICT) Sector and Telecom Services: The Information and Communication Technologies sector is one of the most important sector through which digital trade can be successful. All the three E-commerce policies focused on initiating the digital framework, in which the ICT sector will be given special attention. The

Government should start attracting foreign investment in the telecom sector especially in the remote areas of Pakistan. The internet connectivity issues should also be solved, as the stakeholders are greatly affected by the slow internet connection and this is also confirmed by (Anwar & Qayyum, 2024). The launch of 3G/4G band in Pakistan paved the way of internet breakthrough. The internet users increased rapidly after the launch of the internet providing companies. The figure 4 compares the mobile cellular subscriptions in Pakistan, India, and Bangladesh and shows that the performance of Pakistan has been declining in this sector. Therefore, immediate steps should be taken to bring advanced technology into the country.

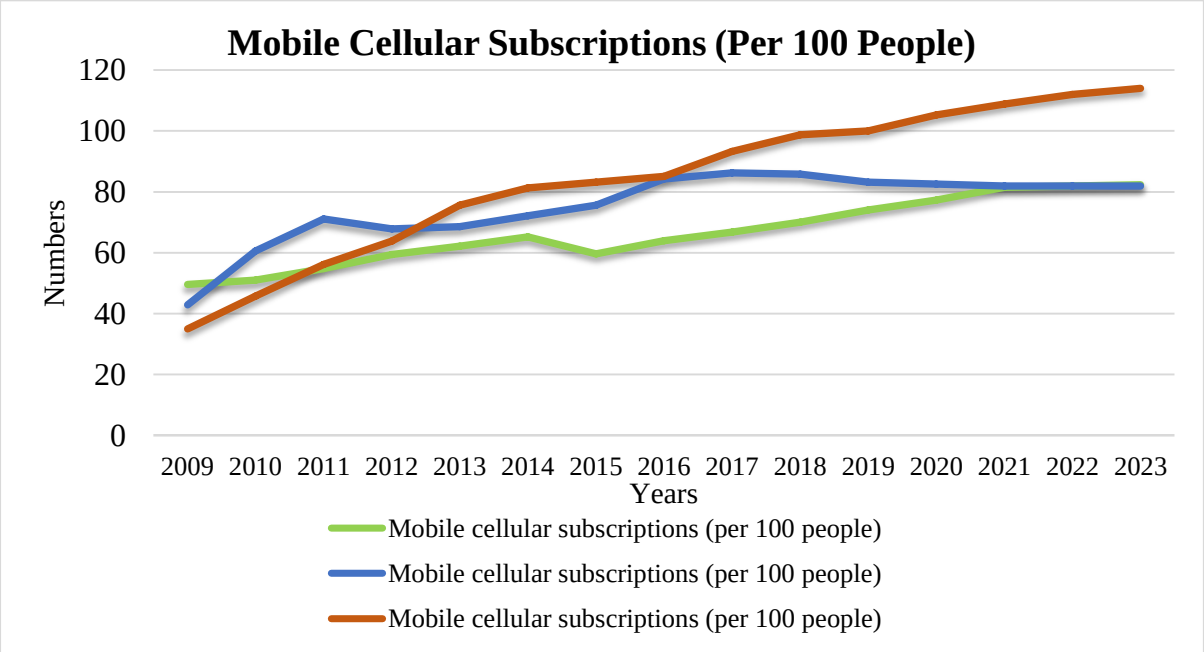

Figure 4: Mobile Cellular Subscriptions (Per 100 People) of Pakistan, India, and Bangladesh

Source: (World Bank, 2020)

Logistics: The logistics provide the supply chain, through which the products and services are transferred from one place to another. The logistics barriers should be dealt with according to the demands of the consumers in the market. Logistics play an important role in the B2C model in which the trade is between the businesses and consumers. The E-commerce policies of Bangladesh and India focused on the upgradation of logistics support. The standard roads and highways are extremely important to upgrade the logistics performance index.

Data Protection and Investment: Without protecting data, the trade would not be possible. It is very important to save and make proper use of the generated data, so that future policy decisions can be effectively implemented. Lately, the Ministry of Information Technology and Telecommunication started the process of Pakistan' first policy of cloud and the bill of data protection is also at the final stages. These laws and regulations will improve the existing data protection issues and problems within the country.

6. Conclusion and Policy Recommendations

The objective of this paper was to analyze the impact of E-commerce factors on economic performance of Pakistan, India and Bangladesh by comparing their E-commerce dynamics and identifying key challenges. Two different models were adopted and the evaluation is done on the basis of technology, internet, communications, data protection, privacy, E-commerce websites and online buying/selling problems. It was concluded that the people in Pakistan are generally inclined to do shopping physically. Some hurdles are present in which the customers are not fully satisfied with the current status of digital commerce in Pakistan. These include the high delivery costs, lack of internet facilities, lack of knowledge about online business and no complaint redressal mechanism. These are some of the major problems in the current scenario of the digital trade in Pakistan.

Empirical models concluded that Pakistan must change its existing E-commerce policy, by taking the practical guidelines from India and Bangladesh. Both these countries have a much better policy as compared to Pakistan. Pakistan should actively get engaged in international discussions concerning the advancement of electronic commerce. By actively participating in forums such as World Trade Organization negotiations, Pakistan stands to gain invaluable insights into global best practices. Pakistan can achieve success in digital trade by incorporating these insights into its legislative framework, which would not only enhance its E-commerce sector, but also bring economic growth and competitiveness on a global scale. This comparison provided valuable insights into the significance of a well-structured digital policy for Pakistan and the potential transformation benefits it can bring. A key takeaway from this analysis is that robust internet infrastructure should be a top priority in Pakistan's digital policy framework to facilitate seamless digital trade and economic growth.

In 2019, Pakistan’s E-commerce policy was introduced but due to lack of political stability, it could not be carried forward. The results show that majority of the people engaged in online business in Pakistan are not aware of the E-commerce policy of Pakistan. The recommendations are that the legal framework of E-commerce must be changed. There is need of internet connectivity especially in remote areas of Pakistan, encouraging foreign investment in the technology and communication sector, data protection and streamlining logistics and taxation issues. The digital trade is in its infancy stage in Pakistan; therefore, the policy makers should give some incentives to the industry so that it can be expanded further just like it expanded in India and Bangladesh. Due to Artificial Intelligence, the technology has been evolving rapidly, therefore for future research; the sample can be enhanced to ascertain specific dynamics of the digital trade. By addressing E-commerce challenges and comparing policies with India and Bangladesh, this research complements URAAN initiative efforts to create a secure digital trade ecosystem in Pakistan.

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Annexure

Table 8: Famous E-commerce Platforms in Pakistan

Serial No.	Websites
1	Daraz.pk
2	Olx.com.pk
3	Amazon.com
4	Alibaba.com
5	Priceoye.pk

Source: (Similarweb, 2023)

Table 9: Famous E-commerce Websites in Pakistan in terms of Domestic Net Sales in 2021

Serial No.	Website	Owner	Net Sales	Market Share	Total Revenue Growth	Revenue Growth %
1	Limelight.pk	Limelight	$50.4m	0%-5%	>US$50m	39.0%
2	Gulahmedshop.com	Gul Ahmed Textile Mills, Ltd	$48.1m	0%-5%	>US$75m	33.8%
3	Khaadi.com	Khaadi Pvt, Ltd	$28.7m	<0%	>US$50m	26.7%
4	Sanasafinaz.com	SS Fashion	$23.4	<0%	>US$20m	33.1%

		Resources				
5	Alkaramstudio.com	Alkaram Textile Mills	$22.1	<0%	>US$50m	31.1%

Source: (ecommerceDB, 2022); (The Pakistan Business Council, 2023)

Table 10: Model 01 Variables Specification

Model 01: $EC_{it} = \text{constant} + \beta_{0it} + \beta_{1i}DI_{it} + \beta_{2i}RD_{it} + \beta_{3i}GNI_{it} + \beta_{4i}Po_{it} + \varepsilon_{it}$

Variables	Measurement	Source
EC – Electronic Commerce (Dependent)	The percentage of enterprises' total turnover from E-commerce / Transactions through Credit/Debit cards	Ministry of Commerce, State Bank of Pakistan Official Reports, Private Entities, Field Visits
β_1 – DI – Digital and Payment Infrastructure (Independent)	Volume of Internet, Internet Penetration Rate, Mobile Phones / Telephone subscription per 100 people	World Development Indicators, Ministry of Information Technology and Telecommunication
β_2 – RD – Research and Development (Independent)	The percentage of Gross Domestic Product devoted to Research and Development spending in each country	World Development Indicators
β_3 – GNI – Gross National Income (Independent)	Per Capita Disposable Income from each country (constant 2015 US$)	World Development Indicators
β_4 – Po – Policy Variable (Internet Penetration (Independent)	Policy Implementation Mechanism	Policy Implemented or Not?

Table 11: Model 02 Variables Specification

Model 02: $\ln GDP\ PC_{it} = \beta_{0it} + \beta_{1i} \ln GCF_{it} + \beta_{2i} \ln IP_{it} + \beta_{3i} \ln Ecom_{it} + \beta_{4i} TO + \varepsilon_{it}$

Variables	Measurement	Source
GDP Per Capita (Dependent)	Country's Gross Domestic Product in Million USD	World Development Indicators
β_1 – Gross Capital Formation (Independent)	Gross Capital	World Development Indicators
β_2 – IP – Internet Penetration (Independent)	Internet Penetration as a share of a population using the World Wide Web in the total population of the Country	World Development Indicators, Ministry of Information Technology and Telecommunication

β_3 – E-commerce Transaction Value	The percentage of enterprises' total turnover from E-commerce / Transactions through Credit/Debit cards	Ministry of Commerce, State Bank of Pakistan Official Reports, Private Entities, Field Visits
β_4 – Trade Openness	(Exports + Imports) / GDP	World Development Indicators