FINANCIAL TECHNOLOGY ADOPTION: A CROSS COUNTRY STUDY

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ABSTRACT

This study aims to examine how the relationship and influence of variables named Facilitating Conditions of Financial Sector, Facilitating Conditions of non Financial Sector, Overall Valuation on Business Climate, and Social Conditions and GDP as a control variable towards the adoption of financial technology across countries using some modifications of the UTAUT framework as novelty. The data were sourced from the Global Financial Inclusion Index, the Global Financial Development Database and the World Development Indicator on the World Bank website in research periods of 2011, 2014, 2017 and 2021 with a total of 500 observations from 125 countries. Panel data econometric techniques employed are pooled least square, fixed effect and random effect model. We find that financial technology adoption is positively associated with the financial sector and overall valuation on business climate. While social conditions have a negative significant effect, the non financial sector has no effect on financial technology adoption. Financial sector intervention through financial technology has become a new instrument which triggers financial growth and helps realize financial inclusion more quickly. Financial inclusion is one element of financial growth and development which is generally measured by the scope and ease of access to financial services in a country.

Keywords: *FinTech, Economic Growth, UTAUT, across Countries, Panel Regression*

1. INTRODUCTION

The Covid-19 pandemic has driven the acceleration of digitalization in the financial sector and the financial technology industry. This acceleration is triggered by the high number of users of smartphones, internet services and financial services to the public. In the development of the industrial revolution 4.0 which has changed the way humans interact, do business and work, the digital ecosystem can stimulate economic activity in a particular area, even in a country. Accelerated access indicates that financial inclusion in a country is very good and fast.

Based on the data quoted from the CNBC Indonesia article, the financial inclusion index in Indonesia is still low at 76.2% compared to other ASEAN countries such as Singapore reaching 98%, Malaysia 85% and Thailand 82% [1]. Therefore, countries compete with each other in increasing financial inclusion programs that can trigger their economic growth and development. According to [2], fintech is defined as a term for development in the financial services sector that involves sophisticated, fast and secure technology. Millennials who generally live and work in urban areas with a high level of mobility, can encourage an increase in per capita income. A good population in a country encourages people to have access to education, health and financial technology as a form of digital transformation in aspects of life. The role of fintech has made a positive contribution to the national economy and expanded public access to financing both in urban and rural areas. However, the development of fintech must also be accompanied by education, literacy, and good governance by the fintech industry and the government of a country.

According to [3], the benefits of fintech for a country are as follows: it can encourage the transmission of economic policies, increase the speed of money circulation so that it can improve the economic conditions of the community, and can encourage a country's financial inclusion program. For example, a phenomenon in Indonesia, in an article written by [4], in Alinea ID news, a study by the Institute for Development of Economics and Finance (Indef) and with the Indonesian Fintech Association (Aftech), an economist Bhima Yudhistira explained that the development of Fintech in the country is able to increase the Gross Domestic Product (GDP) by Rp. 25.97 trillion, either directly or indirectly. Fintech services have succeeded in reaching sectors that are currently untouched by existing financial service providers, such as banking. In addition, in 2018, the distribution of fintech credit in Indonesia reached Rp. 7.64 trillion and was mostly channeled to the trade and agriculture sectors. Furthermore, investment in fintech in Indonesia reached Rp. 5.69 trillion which was obtained from the portion of Indonesia's GDP formation multiplied by the number of world's fintech investments. One key dimension of financial developments is financial inclusion which is commonly measured by coverage and ease of access to financial services in a country.

Since the global financial crisis in 2008, emerging technologies and financial integration and innovation have boosted the development of fintech. However, as technology based financial innovation, fintech differs from conventional financial innovation [5]. Widespread use of the internet, mobile technology, data analytics and computing power have opened new ventures in finance industries. Driven by technological advances, new service models have developed in the financial industry which offer additional opportunities to users and the emergence of these new businesses aims to challenge existing financial institutions by using technology to deliver value to customers in new, more efficient and effective ways [6]. In addition according to [7], one of the many reforms carried out in the economic field is by intervention in the financial sector. Financial sector intervention through financial technology has become a new instrument which triggers financial growth and helps realize financial inclusion more quickly. Financial inclusion is one element of financial growth and development which is generally measured by the scope and ease of access to financial services in a country. World Bank Group President Jim Yong Kim said that having access to financial services is a critical step towards reducing both poverty and inequality, and new data on mobile phone ownership and internet access show unprecedented opportunities to use technology to achieve universal financial inclusion. Worldwide, 69% of the approximately 3.8 billion adults have an account with a bank or mobile money provider. According to the Global Findex Database, this proportion increased from 51% in 2011 to 62% in 2014, with 515 million adults opening accounts between 2014 and 2017, and since 2011, 1.2 billion people have opened accounts. These rapid gains, while slow progress elsewhere, are often hampered by gender and wealth inequalities [8]. In the 2021 edition according to [9], based on a nationally representative survey of over 125,000 adults in 123 economies during the Covid-19 pandemic, it is suggested that up to date indicators on access and use of formal and informal financial services and digital payments provide insights into actions that enable financial resilience. This finding corresponds to the study conducted by [10] who examined the dominance of fintech culture on the perception of behavior of citizens from three countries named the United States, Canada, and Bangladesh. The research conducted by [5] in observing the use of fintech and sustainable development in China, gave significant results in the central region of China in providing needs and opportunities of fintech development which includes economic growth, social, emission consumption and environmental management in various dimensions. For example, a World Bank survey conducted by [11] in 2017 reported that in high income countries, more than 70% of adults aged 15 years or older have made payments through digital channels where developing countries have a percentage of less than 50%.

According to [9], in China, 80% of adults have made a payment with a digital merchant, compared to 20% of adults in other developing countries. Covid-19 pandemic is also accelerating the adoption of digital financial services. 40% of adults in developing countries outside China paid for digital merchants by cards, phones or websites, and one third of adults in developing countries paid their utility bills directly from their account for the first time in the pandemic. Mobile money has become a key driver of financial inclusion in sub-Saharan Africa, especially for women, both as a driver of account ownership and user through mobile payments, savings and loans. The availability of cross country datasets is freely available for example, the Global Financial Inclusion Index (FINDEX), the Global Financial Development

www.jatit.org

Database (GFDD) and the World Development Indicator (WDI) on the World Bank website allow the authors to learn more into this phenomenon through real indicators.

This study produces new research on the factors which play a role and encourage the adoption of financial technology in developed and developing countries by using a modified UTAUT framework proposed by [12], which is based on the real indicators of characteristic conditions which support economic and social stability in these countries. At this point, the novelty elements such as the UTAUT framework for the country level by using the real indicators of this analysis are highlighted. The authors recognize that the UTAUT framework is used to assess individual or organizational adoption of financial technology. However, this study also aims to attempt new innovations in macro fintech adoption research, including how to implement and encourage financial technology through real indicators of a country based on growth, economic stability, social conditions so that we can observe technology adoption across countries.

According to [13], the financial system serves an important purpose of providing savings, credit, payment and risk management products to people with different needs. An inclusive financial system which enables broad access to financial services, without price or non price barriers to its use, could benefit especially the poor and other disadvantaged groups. Without an inclusive financial system, poor people would have to rely on limited savings to invest in education or become entrepreneurs, and small and medium enterprises would rely on limited income to find promising growth opportunities. This could contribute to persistent income inequality and slowing economic growth.

The authors investigated this topic based on the research conducted by [5] which examines the relationship between fintech and sustainable development in China by using real indicators, such as economic growth, social development, consumption emissions, and environmental governance which are almost the same as this study. In addition, the authors are also inspired by the research conducted by [14], who conducted research on the international comparison of technology adoption testing the UTAUT model in Korea and the US, which shows that people in the US are more interested in using the system because it is influenced by social factors. As carried out by [15], it concludes that the UTAUT model is applicable to

the Zambian context in determining the factors influencing the adoption of e-banking services, and the results make a positive contribution to the user's intention to adopt the technology in the country. Another study was also conducted by [16] which examined the economic strengths that drive fintech adoption across countries, stating that fintech helps make the financial system more inclusive and efficient, which can benefit economic growth. Therefore, based on references made by previous researchers, the authors attempted to use modifications of the UTAUT model to describe the macroeconomic conditions of a country with different research models based on real indicators and data that are expected to explain different conditions and characteristics across countries to assess an adoption of fintech that will enhance the program of financial inclusion and economic growth in the country. Previous studies used the UTAUT framework or other analytical methods to assess the adoption of financial technology in a country or region only by analyzing it individually based on primary collection data from the relevant sample party.

The research is expected to benefit a variety of stakeholders, particularly governments. Through the results of this research, it is hoped that relevant stakeholders will be able to play an important role and provide contributions and factors which drive the country's economic growth, restore domestic business environment, and social conditions. For the fintech industry, it also is expected to help fintech be adopted across the country's society through new programs and collaborations abroad, further expand the reach of fintech and technical sophistication, and support educational programs in order to provide information and ensure data security.

For society, this research will benefit as a source of knowledge and means to provide insights to the public about the factors that play a role in the adoption of financial technology in cross country studies in increasing the country's economic growth. For researchers, this study will become a reference to add information and knowledge of the adoption of financial technology in cross country studies by using modification of the Theory of Acceptance and Use of the Technology Framework (UTAUT), which has an important role in the country's economic development and provide an overview of the impacts which are caused by determinants through Panel Data Analysis. For academics, this research is expected to become additional sources of new knowledge and information regarding cross country

adoption of financial technology by trying to use different models to analyze factors which can encourage people in a country to increase adoption of financial technology and the economic growth in the country.

This research is structured as follows: literature review, discussion, and conclusions. In the next part, literary studies are presented. The discussion part identifies key findings and discusses their theoretical and practical implications, limitations, and future research. The last section summarizes and also annexes the results of the research.

2. LITERATURE REVIEW

This study aims to analyze the factors which influence financial technology adoption in a cross country.

2.1 Technology in the Disruptive Era

Technological developments have caused very broad and important changes to ongoing activities. These changes are inevitable and must adapt to the presence of technology resulting in lifestyles which change very quickly.

According to [17], the current wave of revolution in digital technology continuity and advancements which are considered as innovative disruptions have changed the world view through ways of using social interactions and personal relationships. The progress of digitalization is running faster than the development of other sectors, including technological developments in the financial sector. Technology and finance have a long history of symbiosis. Therefore, technological innovation is actually not a new phenomenon for the financial industry. In this case, financial technology known as fintech is not a new development for the financial service industry. This topic has attracted the attention of many stakeholders at the general (community) level as decision makers, academics, financial entrepreneurs and consumers or users of fintech at various levels in Indonesia.

Occurring changes can create a disruption to activities which are running well in business and industry. Therefore, society is faced with a prolonged disruption evolving in every activity which can change or destroy the existing order to produce better future performance in addressing the interests of customers and workers [18].

2.2 Financial Technology

Financial technology is an industry which is built from financial services and technology to improve the system of financial activities [19]. This fintech is not limited to the type of financing, peer to peer lending or crowdfunding, but also the overall financial services offered by various financial institutions with innovations which disrupt services and have an impact on traditional systems [20]. The intended innovation is financial innovation which is given a touch of modern technology. Fintech is a type of company in the field of financial services which is combined with technology. It can also be interpreted as a segment in the startup world that helps maximize the use of technology in order to sharpen, transform, and accelerate various financial aspects [2].

Financial technology represents the emergence of companies (startups) which provide technology facilitating financial services and independence of traditional financial institutions. Anyone who can innovate by developing new technology based financial service applications can become a fintech user. Therefore, there has been a shift from bank driven to consumer driven, opening up space for many new users in the financial service sectors which must be funded by cost of financial services which are efficient and reach the wider community [21]. Moreover, with major innovations in the financial systems and other infrastructures, fintech is fundamentally disruptive, impacting many aspects of the economy, society, and energy as well [5].

2.3 Financial Inclusion

Financial development is an important factor in the country's economic growth. One of most important scientific issues now has shifted toward transmission channel of how finance helps economic growth [22].

Mobile money innovation enables people to access financial services through their mobile phones in an ecosystem [23]. Globally, financial inclusion programs are increasing due to sophisticated technology which accelerates the deployment process, such as all activities carried out via the internet and mobile devices. Financial inclusion includes all efforts to improve public access to financial services by removing all forms of price and non-price barriers [13]. Economists may have access to financial services but may be unwilling to use them for sociocultural reasons or high costs. There are also problems such as the

ability to respond only to consumption and the motivation and interest in saving in banks are low. In this case, providing a wide range of employment opportunities is the government's main task. The role of financial inclusion and strengthening efforts must be supported by community conditions, so that all poverty alleviation efforts can be optimally delivered.

2.4 The Unified Theory of Acceptance and Use of Technology (UTAUT)

Adopting a particular technology is a more complex decision-making than purchasing non-technology goods and services. There are also some theory and framework proposed to explain the decision of technology adoption. The UTAUT (Unified Theory of Acceptance and Use of Technology) model is one of technology acceptance which uses elements in eight existing technology acceptance models, namely Theory of Reasoned (TRA), Technology Acceptance Model (TAM), Motivation Model (MM), Theory of Planned Behavior (TPB), combined TAM and TPB, Model of PC Utilization (MPTU), Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT) to obtain a unified view of the acceptance of the latest technology [12]. The UTAUT model has proven to be more successful than eight other theories in explaining up to 70 percent of the user variants in individual contexts [24]

Next, a further testing [12] suggested four major constructs which play an important role as a direct determinant of Behavioral Intention and Use Behavior: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. The UTAUT also conceptualizes four individual difference variables (gender, age, experience and voluntariness) as moderators of these key relationships between the model's constructs. Performance Expectancy (PE) is the degree to which individuals believe that using technology will increase their task performance. This aspect was formulated for the UTAUT through the aggregation of five constructs: embodied perceived usefulness, job technology fit, extrinsic motivation, relative advantage and outcome expectations in the different models. Effort Expectancy (EE) is the individual assessments of the degree to which technology utilization is free of effort. This aspect was formed by integrating the effort oriented constructs from the informing models (ease of use and complexity). Meanwhile, social influence (SI) is an individual's perception that others think should use an information technology artefact. Then, Facilitating Conditions are variables which explain an individual's belief that the existing technical and organizational infrastructure can support the use of technology.

Behavioral Intentions (BI) represents a transition between the individual and social related variables and the personal use of an information technology artefact in UTAUT [12]. It captures the motivation to enact the focal behavior. UTAUT provides the sufficient presentation of belief intention behavior relationships. This is due to the fact that the influences of individual cognitive and evaluative responses toward the volitional use of technology are mediated by the information processing, underlying personal expectancies and social influences [25].

2.5 Previous Research

In the research conducted by [5], it offers an index system to evaluate sustainability and conducts an in-depth analysis of the relationship between fintech and sustainable development based on data from peer-to-peer (P2P) platforms in 31 provinces in the country. The empirical results show that the U-shaped relationship between FinTech and sustainable development using key component analysis (PCA), which is largely driven by the wider economic growth patterns as well as China's very broad long-term economic development pattern, is the primary reason for this U-shaped relationship. The analysis of heterogeneity in the study found that the impact of fintech on sustainable development varied significantly across regions, being most evident in the eastern and central regions of China and marginal in the western regions, while the impact in the central regions was greater. Forms of development include economic growth, social development, consumption emissions, and environmental governance in various dimensions. Therefore, based on this research at the development stage, countries should pay more attention to sustainable development rather than just focusing on one indicator such as GDP.

In the research of [23], UTAUT2 (Unified Theory of Acceptance and Use of Technology 2) and prospect theory are adopted, and the method of partial least squares structural equation modeling is applied. As a result, this study found that service and effort expectations are closely related to the willingness to use mobile money services. However, unlike the established position, price value, hedonic motivation, social influence, and perceived risk do not influence intention and use of mobile money

services. This research makes important theoretical contributions and provides practical and policy implications for deepening financial inclusion.

The use of information and communication technology (ICT) is believed to be able to overcome development problems in rural areas. The use of ICT tools to access and disseminate information is important for communities in disadvantaged areas. The expansion of internet access networks to bridge digital interests is a major driver of ICT diffusion among rural communities. On this basis, research conducted on [26] shows how the pattern of adoption and use of ICT by rural communities fits into the Rural Technology Acceptance Model (RuTAM) model used to measure socio-economic impacts. The aim is to clarify the technique of its use and show that demographic factors, social influences, and driving conditions influence the acceptance and use of technology in rural areas.

The study conducted by [14] compared the UTAUT model in analyzing culture to influence the adoption of technology, especially fintech, in two countries, namely the US and Korea. The results show that there is no significant difference in the impact of social influence between Korea and the US. In general, social influence is greater and more acceptable in Asian cultures. While the results show that people in the US tend to be more interested in using the system, this is different from people in Korea who have not fully switched to financial technology system activities, which are basically influenced by external factors such as trends and social groups at that time.

In a study conducted by [27] it was explained that fintech promises a great influence on a country's financial inclusion program. In other economies, adoption of fintech can be associated with the high cost of traditional finance, the presence of a supportive regulatory environment, and other macroeconomic factors. Finally, it was found that demographics played an important role in the adoption of fintech services. Fintech helps make the financial system more inclusive, effective, and efficient and can also benefit economic growth across the country. First, fintech helps increase financial inclusion, for example, for basic payment services in EMDE, and is likely to be positive for the growth and development of such economies. Second, fintech activities can increase cross-border competition in financial services over time. While many fintech companies start by focusing on one economy, there are a number of examples of cross-border expansion and successfully copying fintech business models in different markets. Such cross-border financial integration can support greater diversification and risk sharing across the economy.

3. HYPOTHESIS DEVELOPMENT

Based on the indicators in the Global Financial Inclusion Survey (FINDEX), Global Financial Development Database (GFDD) and World Development Indicators (WDI) files, the authors build an index of financial technology adoption which are compared between countries based on a modification of the UTAUT framework which will be assessed based on economic comparisons, characteristics, and advantages of these countries from the selected indicators. These indicators include category of facilitating conditions (financial sector), facilitating conditions (non financial sector), overall valuation of a country's business climate, and social conditions of the proposed framework, as depicted in Figure 1. Financial development is very important because it can increase the economic efficiency of a country's financial system and this can affect economic activities and energy demand. Therefore, there is a relationship between economic growth in a country causing an increase in the adoption of financial technology which can help achieve government programs in increasing the financial inclusion index in a country.

3.1 Effects of Facilitating Conditions of Financial Sector on the Adoption of Financial Technology

For the measurement of Facilitating Conditions of Financial Sector (FAS_FIN), the authors used indicators, liquid liabilities to GDP (%), central bank assets to GDP (%), stock market capitalization to GDP, and stock price volatility. According to [28], stock market development increases diversification and liquidity, which increases the amount of investment going to higher return and higher risk projects.

Since stock market development increases the amount of funds available for investment projects, according to [28] the development of the stock market is expected to increase diversification and liquidity, increasing investment in higher return and higher risk projects. Stock market performance can be expected to lead to more investment, economic growth, and energy demand as it makes more funds available for investment project. The study in [29] explains the relationship between financial growth and liquid liabilities. Increasing financial development and liquid liabilities have encouraged

economic growth by prioritizing efficiency in resources. The Central Bank supports as a lender and adequate liquidity supplier to the financial sector and the Nigerian economic sector. This development leads to more investment, economic growth, and demand for energy. The role of the Central Bank's digital currency is important for monetary policy and promoting the welfare of the people in the country. In addition, old fashioned physical currency is being replaced as a means of payment in conventional transactions by credit cards, debit cards, and other electronic means of payment.

Equity market volatility is undermining the ability of financial markets to effectively and efficiently mobilize financial resources and invest in viable investments to support economic growth and development index [30]. According to [7], one of the many reforms carried out in the economic field is by intervening in the financial sector. Financial innovation with the use of new technology has become a new instrument which triggers financial growth, ensuring financial stability for the good of financial consumers in countries and driving force for the adoption of financial technology through good economic growth in the country [31]. Fintech could mitigate the risk of financial instability through decentralization, diversification, enhanced transparency, improved efficiency, and increased convenience of financial services [32]. In fact, financial innovation encourages a country to prioritize fintech adoption.

H1a: Facilitating Conditions of Financial Sector (FAS_FIN) have a positive relationship and influence on the adoption of financial technology in a country.

3.2 Effects of Facilitating Conditions of Non-Financial Sector on the Adoption of Financial Technology

Regarding the measurement of Facilitating Conditions of Non Financial Sector (FAS_NFIN), the authors used indicators which include computers, communications and other services, high technology of manufactured exports, ICT goods exports, and Logistic Performance Index. According to the research by [33], in South Korea, in both long term and short-term models, high tech exports have a strong positive impact on GDP per capita and economic growth rates. ICT of total goods export, according to [34]that the spread of ICT into all corners of the world has had a profound effect on economic development, particularly in areas where communication, access to information, learning, research, and innovation play a key role in driving

success and the investment. In this case, ICT has had measurable effects on economic growth for all nations.

Quality of port infrastructure is considered to be able to help economic growth in a country. This statement is supported by the research [35], who suggested that many countries are planning to build up regional hub ports, following successful cases such as Singapore, Shenzhen, Hong Kong, Dubai, to name a few and expecting additional growth of their economies in forms of new service markets. This could be aided by developing transshipment facility and efficient transport network. While on other indicators, Logistic Performance Index (LPI) according to [36]is a good predictor of gross domestic product (GDP) performance which confirms that improving a countries logistics system has a positive effect on countries wealth.

H2a: Facilitating Conditions of Non Financial Sector (FAS_NFIN) have a positive relationship and influence on the adoption of financial technology in a country.

3.3 Effect of Valuation on Business Climate on the Adoption of Financial Technology

Third, for the measurement of Overall Assessment of a Business Climate (BUSS), the authors considered the indicators of electric power consumption, electricity production from renewable sources excluding hydroelectric and CO2 emissions from gaseous fuel consumption. According to [37], in developing regions, such as China, Russia, and Indonesia, production based energy consumption is higher than consumption based energy consumption. Energy consumption results from the final production-based billing, which depends not only on the upstream energy intensity of all participating countries, but also on the inter-regional production network which shows different profiles across countries. China and Indonesia share the same patterns, with production-based energy consumption slightly lower than production-based energy consumption at 10.1% and 4.4% lower than consumption based energy consumption respectively.

In [38], the study found a causal relationship between energy consumption and economic growth. China government carried out a policy of economic restructuring by reducing the industrial market share in energy in the economy with the aim of reducing CO2 emissions. At that time, China continued to

strive to reduce its energy consumption, especially fossil energy for the sake of reducing CO2 emissions, which was done by adjusting the structure of energy consumption through increasing the share of clean energy such as natural gas, nuclear power, hydropower and renewable energy. In addition, [38]mentioned that energy consumption plays an important role in economic growth and economic growth encourages energy use. Increasing the share of clean energy and implementing energy efficiency must be one of the most effective ways to reduce CO2 emissions in order to maintain economic growth in China at that time.

H3a: Overall Assessment of a country's Business Climate (BUSS) has a positive relationship and influence on the adoption of financial technology in a country.

3.4 Effect of Social Conditions on the Adoption of Financial Technology

Fourth, the assessment of Social Conditions (SOC) uses the indicators of the ratio of employment to population 15+ percentage of the total national estimate, agriculture, forestry, and fishing value added (annual % growth), birth rate crude per 1000 persons, death rate crude per 1000 persons and population in an agglomeration of more than 1 million total population. Objective indicators are sometimes seen in composite indices, which support national and international comparisons.

Objective indicators are measured based on the frequency and external characteristics of a person. These are real conditions such as physical environment, economic, or technical factors. Social indicators are often used as an objective measure of quality of life. According to [39], quality of life refers to the description and assessment of the conditions or living conditions of people in a particular country or region.

H4a: Social Conditions (SOC) have a positive relationship and impact on the adoption of financial technology in a country.

3.5 Effect of Growth Domestic Product as Control Variable

According to [40], Gross Domestic Product (GDP) is one of the important indicators to measure the economic conditions of a country in a certain period. GDP is basically the amount of added value generated by all business units in a country or is the total value of final goods and services produced by all economic units. In short, GDP is one of the methods for calculating national income. GDP at nominal current prices shows the ability of economic resources produced by a country.

A country's economy is said to be good or healthy if the unemployment rate is low and wages are rising. This is because the business sector requires more workers to meet the increased production needs due to economic growth. If GDP growth is too fast, the central bank will raise interest rates to keep pace with the inflation (increased prices of goods and services). Therefore, a large GDP value indicates large economic resources and is one of the triggers in encouraging the needs for the use of fintech in a country.

H5a: Growth Domestic Product (GDP) as control variable has a positive relationship and influence on the adoption of financial technology in a country.

3.6 Measurement of Financial Technology Adoption Index (FTI)

Finally, to measure Financial Technology Adoption Index (FTI) as a dependent variable, the authors used indicators from FINDEX database, which include made or received digital payments in the past year young adults (% aged 15-24), received wages through a mobile phone (% wage recipients, age 15+), used the internet to pay bills or to buy something online in the past year, young adults (% aged 15-24), and paid utility bills by using a mobile phone (% age 15+). The results of research conducted by [41] in India, since March 2016, smartphone users relying on the internet speed have continued to grow, which are considered to be changing to digital payments in all areas to make it easier in making various transactions.

According to [42] the use of modern technology as a non-cash payment instrument, both domestically and internationally, has grown rapidly accompanied by various innovations which lead to its use becoming more efficient, safe, fast and convenient. When people take advantage of the electronic money available on their mobile accounts, the ease of making transactions can be felt by many people, especially when making various types of payments. According to an article from [43], the potential for a cashless society is growing and payment service providers are competing to provide online payment services and ease of use of digital wallets. Business people also have to compete by transforming the presence of digital transaction services, especially during the pandemic in Indonesia, as online transactions have a very important role in everyday life and the growth which occurs in digital transactions and online payments is also predicted to increase in the future. According to the article in

China in the last 5 years, the volume of mobile payment transactions has increased by 15 times, exceeding three times of China Gross Domestic Product in 2020.

This research is reinforced by [44]which states that in Latvia, fintech development meets well developed financial market infrastructure and a highly skilled workforce with relatively high entrepreneurial abilities. In addition, Latvia ranks highly internationally in the context of information and communication technology (ICT) developments, demonstrating a strong position in internet subscriptions, electricity access, supply quality, and the percentage of internet users among the adult population. Many researchers use the UTAUT framework to compare the use of financial technology across countries. For example, the study which was conducted by [10]who examined the dominance of fintech culture on the perception of behavior of citizens from three countries namely the United States, Canada, and Bangladesh. Another study was also conducted by [45] who conducted a cross cultural study of intentions to use mobile banking between Lebanese and British consumers using UTAUT2.

The research conducted by [5] in observing the use of fintech and sustainable development in China, gave significant results in the central region of China in providing needs and opportunities of fintech development which includes economic growth, social, emission consumption and environmental management in various dimensions. In addition, according to their research, the management of fintech is an important driver in sustainable development in a country. According to [46] fintech describes a greater context on economic, social and global environmental dynamics and has an impact on countries.
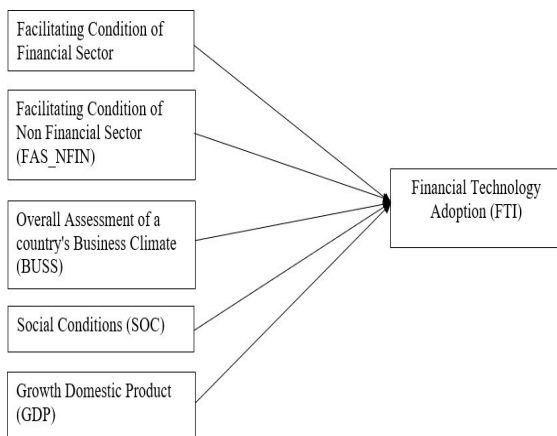

Figure 1. Research Framework

4. METHODS

This study has been tested by using quantitative methods because the data used in this study are in the form of numbers. The type of research data is panel data and the data source used in this study is a secondary data source. Sample data are obtained from World Bank data, including:

1. The Global Financial Inclusion Survey (FINDEX) which can be accessed through the website: https://www.worldbank.org/en/publication/globalfindex to construct the index.
2. Global Financial Development Database (GFDD) which can be accessed through the website: https://www.worldbank.org/en/publication/gfdr/data/global-financial-development-database
3. World Development Indicators (WDI) which can be accessed through the website: https://databank.worldbank.org/source/world-development-indicators

The Global Financial Inclusion Database (FINDEX) provides metrics by which a new set of indicators can measure how adults in 148 countries save, borrow, pay, and manage risk. These indicators were developed by using survey data collected from interviews with more than 150,000 nationally representative adults aged 15 and over randomly selected in 148 countries. Global Findex data shows clear differences in the use of financial services between high income and developing countries based on individual characteristics. This dataset is to track the impact of financial inclusion policies around the world and develop a deeper understanding of how people around the world save, borrow, pay and manage risk.

According to [47], Global Financial Development Database (GFDD) presents a comprehensive dataset of the characteristics of financial systems around the world since 1960. This database is a one-stop database which classifies data and variables collected. This data set can be used as a yardstick to characterize and compare financial systems across countries. It can also be used to better assess the relationship between monetary and economic development in order to assess the effectiveness of various fiscal policies and regulations. GFDD also measures financial institutions and markets, the extent to which financial services are available to individuals and businesses access. At a broader level, financial development can be defined as improving the quality

of the five main functions of finance: preparing and processing information on investment and capital allocation based on a certain assessment, monitoring individuals and companies in carrying out corporate governance, facilitating trade, diversification, risk management, mobilizing and collecting the exchange of goods, services and financial products. Financial institutions and markets around the world vary widely in how much to provide this essential service.

According [9] the World Development Indicators (WDI) is a compilation of relevant, high quality, and internationally comparable statistics about global development and the fight against poverty. The database contains 1,400 time series indicators for 217 economies and more than 40 country groups. This paper is helping countries find sustainable solutions to their development challenges in an increasingly complex and interconnected world. The main indicators include income per capita, economic structure, urbanization, savings figures, quality of life and human development index.

The research dataset consists of samples of 125 countries with observation years of 2011, 2014, 2017 and 2021 with a total of 500 observations. While the UTAUT framework factor used in the study consists of macro and real indicators which can form the research variables in this study, each has a different value before the research data are being processed into datasets. The steps taken are data interpolation for incomplete data and then the data is normalized through the Z-Score method. With this formula, each indicator value is reduced by Miu (μ) which is the average value of the indicator, then divided by sigma (σ) which is the standard deviation so that it can form the variables/factors in this research.

In addition, in the selection of indicators in this study, the authors have also analyzed indicator data according to each UTAUT factor which can describe or represent these factors. All indicators used are available and classified in the respective data in FINDEX, GFDD and WDI on the official World Bank website according to the variables used in this study. Therefore, the authors can proceed to the stages of selecting, collecting and analyzing data. Attached in the next page are the indicator data for the research variables which will be used:

Table 1. List of Indicators

No	Name	Indicators
1.	**Financial Technology Adoption Index (FTI)** As dependent variable	- Made or received digital payments in the past year, young adults (% age 15-24) - Received wages through mobile phones (% wage recipients, age 15+) - Used the internet to pay bills or to buy something online in the past year, young adults (% age 15-24) - Paid utility bills: using mobile phones (% age 15+)
2.	**Facilitating Conditions of Financial Sector (FAS_FIN)** (Measuring the assessment of overall supporting conditions for technology adoption which arises from financial sector)	- Liquid liabilities to GDP (%) - Central bank assets to GDP (%) - Stock market capitalization to GDP (%) - Stock Price Volatility
3.	**Facilitating Conditions of Financial Sector (FAS_NFIN)** (Measuring the assessment of overall supporting conditions for technology adoption which arises from non-financial sector)	- Computer, communication, and other services (% of commercial service imports) - High technology exports (% of manufactured exports) - ICT goods exports (% of total goods exports) - Logistic Performance Index (LPI)
4	**Overall Valuation on Business Climate (BUSS)**	- Electric power consumption (kWh per capita) - Electricity production from renewable sources, excluding hydroelectric (% of total) - CO2 emissions from gaseous fuel consumption (% of total)
5	**Social Conditions (SOC)** (Measuring sophistication of society welfare and inequality)	- Employment to population ratio 15+, total national estimate (%) - Agriculture, forestry, and fishing, value added (annual % growth) - Birth rate, crude (per 1000 people) - Death rate, crude (per 1000 people) - Population in urban agglomerations of more than 1 million (% of total population)
6	**GDP, PPP (constant 2011 international $)**	

As an additional note on the indicators used in this study, the authors use these indicators based on the grouping of characteristics which are already available in the World Bank data from the FINDEX, GFDD and WDI files and then the authors determine these indicators based on the completeness of the available data and according to the variables used.

Furthermore, the following is an explanation of the aggregation method of each indicator which represents the research variables using the Z-Score:

1. Creating a research dataset from a sample of countries which have been filtered based on

   country criteria which have complete data for each of the selected indicators.
2. Each research variable (dependent and independent), is measured based on several indicators which represent these variables.

3. Each indicator contained in each research variable is calculated by using Z Score, with the formula: = (Data Value - Mean) / Standard Deviation. The results of Z Score from each indicator contained in the research variable will be added and form the value of the research variable.
4. After calculating the Z Score of each variable indicator, the Z Score value is combined to obtain the overall value of the indicators which have been selected to obtain the value of the research variables.
5. After that, making further processing into the STATA software for the data panel regression analysis with Fixed Effect Model, Random Effect Model, and the specification tests are Breusch Pagan, Chow and Hausman Test. Then, we use the following regression specifications:

$$FTI = \alpha0 + \alpha2FASFIN + \alpha3FASNFIN + \alpha3BUSS + \alpha4SOC + \alpha5GDP + +\varepsilon i \ (1)$$

Where:

FTI: Financial Technology Adoption Index

FAS_FIN: Facilitating Conditions of Financial Sector

FAS_NFIN: Facilitating Conditions of Non-Financial Sector

BUSS: Overall Valuation on Business Climate

SOC: Social Conditions

GDP: Growth Domestic Product

5. DATA ANALYSIS AND RESULTS

The technique of data analysis used in this study is panel data regression which consists of Pooled Least Square, Fixed Effect Model (FEM), Random Effect Model (REM) and the specification tests are Breusch Pagan Test, Chow Test, and Hausman Test. The authors also use Statistic Test (Descriptive Statistics and Classic Assumption Test) and finally Robustness Test by using STATA 15 software. Next, to use complete country data in the FINDEX, GFDD and WDI file totaling 183 countries, the authors apply cleaning and filtering country data techniques according to the variables and indicators used in this study. Countries which have complete criteria and data in accordance with predetermined variables and indicators are 125 countries which will be sampled in this study.

The country samples used in this study also include the following criteria:

1. Based on and aligned with a sample of countries in the three databases: FINDEX, GFDD and WDI (because the three databases have a different number of countries).

2. The samples of research countries consist of developed and developing countries.

3. The research sample countries are selected based on complete or sufficient data for data processing on each indicator in the study period.

The size of the country included in developed or developing countries can be observed in terms of education level, per capita income, population growth, sources of income, health and education levels as well as the rapid use/adoption of technology. Then, the countries formed a panel of datasets for periods of 2011, 2014, 2017 and 2021 to 500 total observations. In the data available in the GFDD file, which is attached only data in late 2020, the researchers allocate the final 2020 value for the 2021 research year. After we form the dataset, we calculate the Z-Score in excel documents from the indicators which have been selected based on the variable interest through aggregation method. The following is an explanation of the aggregation method of each indicator which represents the research variables by using the Z- Score.

The data for this study were sourced from FINDEX, GFDD and WDI. Researchers chose these indicators based on the following criteria:

1. The data can be attributed to the modification of some parts of the UTAUT framework used for macro country assessments.

2. The selected indicators in each variable are based on their macro-influence according to the research hypothesis which can increase economic growth to encourage the adoption of financial technology to achieve financial inclusion programs in a country.

3. Completeness of available indicator data which meets the criteria for the research sample is adjusted for the variables in this study in 2011, 2014, 2017, and 2021.

4. These indicators have different value sizes. Therefore, in the process of forming them to become a variable dataset in this study, it is necessary to carry out a data aggregation process so that the value of each indicator can have a similar value size and can be formed into a research variable on several indicator selections.

Afghanistan	Egypt, Arab Rep.	Kyrgyz Republic	Panama	United Kingdom
Albania	El Salvador	Lao PDR	Paraguay	United States
Argentina	Estonia	Latvia	Peru	Uruguay
Armenia	Finland	Lebanon	Philippines	Uzbekistan
Australia	France	Liberia	Poland	Venezuela, RB
Austria	Gabon	Lithuania	Portugal	Vietnam
Bangladesh	Georgia	Luxembourg	Romania	West Bank and Gaza
Belgium	Germany	Madagascar	Russian Federation	Zambia
Benin	Ghana	Malawi	Rwanda	Zimbabwe
Bolivia	Greece	Malaysia	Saudi Arabia	
Bosnia and Herzegovina	Guinea	Mali	Senegal	
Brazil	Honduras	Malta	Serbia	
Bulgaria	Hong Kong SAR, China	Mauritania	Sierra Leone	
Burkina Faso	Hungary	Mauritius	Singapore	
Cambodia	India	Mexico	Slovak Republic	
Cameroon	Indonesia	Moldova	Slovenia	
Canada	Iran, Islamic Rep.	Mongolia	South Africa	
Chile	Iraq	Montenegro	Spain	
China	Ireland	Myanmar	Sri Lanka	
Colombia	Israel	Namibia	Sweden	
Congo, Rep.	Italy	Nepal	Switzerland	
Costa Rica	Jamaica	Netherlands	Tajikistan	
Cote d'Ivoire	Japan	New Zealand	Tanzania	
Croatia	Jordan	Nicaragua	Thailand	
Cyprus	Kazakhstan	Niger	Togo	
Czech Republic	Kenya	Nigeria	Tunisia	
Denmark	Korea, Rep.	North Macedonia	Turkey	
Dominican Republic	Kosovo	Norway	Uganda	
Ecuador	Kuwait	Pakistan	Ukraine	

Figure 2. List of Countries

Based on the presentation of previous data collection and analysis techniques, the following are the results of the study:

Table 2. Descriptive Statistics

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	mean	sd	min	max
FTI_ADOPT	500	0	3.812	-5.107	15.55
FAS_FIN	500	-0.880	2.428	-4.444	15.210
FAS_NFIN	500	-0.278	2.650	-20.491	20.820
BUSS	500	-0.206	1.975	-3.647	7.891
SOC	500	-0.450	2.377	-7.251	9.578
GDP	500	9.462	1.112	6.974	11.81

Table 3. Correlation Analysis

VARIABLES	FTI_ADOPT	FAS_FIN	FAS_NFIN	BUSS	SOC	GDP
FTI_ADOPT	1					
FAS_FIN	0.312	1				
FAS_NFIN	0.344	0.446	1			
BUSS	0.547	0.32	0.407	1		
SOC	-0.031	-0.159	-0.014	-0.098	1	
GDP	0.578	0.531	0.577	0.738	0.294	1

Table 4. Multicollinearity Test

Variable	VIF	1/VIF
GDP	3.62	0.276
BUSS	2.32	0.430
FAS_NFIN	1.64	0.611
FAS_FIN	1.48	0.677
SOC	1.19	0.843
Mean	VIF	2.05

Table 5. Heteroscedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity
Ho: Constant variance
Variables: fitted values of FT_ADOPT
Chi2(1)   = 0.14
Prob > chi2   = 0.704

Table 6. Regression Panel Data Test

Variables	Pooled Least Square	Fixed Effect	Random Effect
FAS_FIN	0.053	0.358***	0.225**
	(0.430)	(0.000)	(0.004)
FAS_NFIN	-0.018	-0.020	-0.031
	(0.781)	(0.788)	(0.628)
BUSS	0.457***	0.307*	0.399**
	(0.000)	(0.078)	(0.002)
SOC	0.198**	-0.183**	-0.024
	(0.001)	(0.021)	(0.716)
GDP	1.469***	3.441	2.644***
	(0.000)	(0.000)	(0.000)
Constant	-13.675***	-32.276***	-14.213
	(0.000)	(0.000)	(0.000)
Breusch Pagan Test			263.41
			(0.000)
Chow Test		8.35	
		(0.000)	
Hausman Test		42.97	
		(0.000)	
Observations	500	500	500
R-squared		0.327	
Number of Country	125	125	125

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

The results in the table above describe the regression results from the empirical model of this study and the most appropriate regression to explain the relationship is Fixed Effect Model (FEM) estimation. The table shows the results of FAS_FIN (β = 0.358, with p value 0.000 < 0.01) so this variable supports the second hypothesis of this study, with a positive effect on FTI Adoption. Then,

the results of the variable FAS_NFIN show (β = -0.020, with a p value of 0.788 > 0.1), then this variable does not have a significant effect and has a negative effect on FTI Adoption. Furthermore, on the BUSS variable which shows (β = 0.307, with a p value of 0.078 < 0.1), this variable supports the third hypothesis of this study by having a positive influence onthe adoption of financial technology in a country. The SOC variable shows results (β = -0.183, with p value 0.021 < 0.05). This variable supports the fourth hypothesis of this study but having a negative influence on the adoption of financial technology in a country. Meanwhile, the Growth Domestic Product as control variable on these tests show results (β = 3.441, with p value 0.000 < 0.01), which means that GDP has a significant effect to the four independent variables on the adoption of financial technology.

Table 7. Robustness Check

Variables	Full Fixed Effect	Model 1	Model 2	Model 3	Model 4	Model 5
FAS_FIN	0.358***		0.359***	0.364***	0.368***	0.484***
	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)
FAS_NFIN	-0.020	-0.029		-0.019	-0.010	-0.026
	(0.788)	(0.697)		0.795	(0.888)	(0.736)
BUSS	0.307*	0.332*	0.307*		0.335*	0.571**
	(0.078)	(0.061)	(0.077)		(0.055)	(0.001)
SOC	-0.183**	-0.196**	-0.182**	-0.193**		-0.217**
	(0.021)	(0.015)	(0.022)	(0.015)		(0.010)
GDP	3.441***	3.868***	3.427***	3.668***	3.524***	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

The results of the robustness test suggest regression for the independent and control variables in each regression model by testing and comparing whether the results obtained from the selected full regression in Fixed Effect Model (FEM) estimation technique. Based on the algebraic sign and significance value, the variables FAS_FIN, FAS_NFIN, BUSS and SOC are the same as the results of each model tested. The report presents estimated coefficients with p value in parentheses. Statistical significance used: * at 10% level, ** at 5% level, *** at 1% level respectively. The conclusion based on the table above shows that the results are robust. However, significance level of the BUSS variable changes in model 4, the significance level is at 5% from 10%.

5.1 Best Model Selection

5.1.1 The Breusch and Pagan Lagrangian Multiplier Test

The Breusch and Pagan Lagrangian Multiplier test is used to determine whether an estimate should use the Common Effect Model or the Random Effect Model. In the Breusch and Pagan Lagrangian Multiplier test, the REM (Random Effect Model) model is selected because the P value (Prob > F) is 0.0000 which is smaller than the 0.05 Alpha value.

5.1.2 Chow Test

Chow Test serves to determine whether an estimate should use the Fixed Effect Model or the Common Effect Model (PLS). For the Chow test, because the P value (Prob > F) is 0.0000 less than the Alpha value of 0.05, then Ha is accepted which means the best choice is the Fixed Effect Model (FEM).

5.1.3 Hausman Test

Hausman test is used to determine which estimation model should be used between the Fixed Effect Model and the Random Effect Model. In the Hausman test, the FEM model (Fixed Effect Model) is selected, because the P value (Prob > F) is 0.000 less than an Alpha value of 0.05, then Ha is accepted which means the best choice is the Fixed Effect Model (FEM).

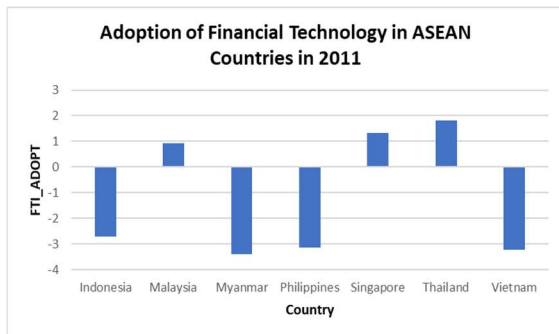### 5.2 Comparison of the Adoption of Financial Technology in Several Sample Countries in the ASEAN Region.

Figure 3. Adoption of Financial Technology in ASEAN Countries in 2011

In 2011, the highest country for financial technology adoption was Thailand with a score of 1.824, and the second highest was Singapore with a value of 1.331. Meanwhile, countries which have very low fintech adoption values were Myanmar and the Philippines with -3.405 and -3.140 values, respectively. Meanwhile, Indonesia in 2011 still had a low level of adoption of financial technology, which was - 2.699.
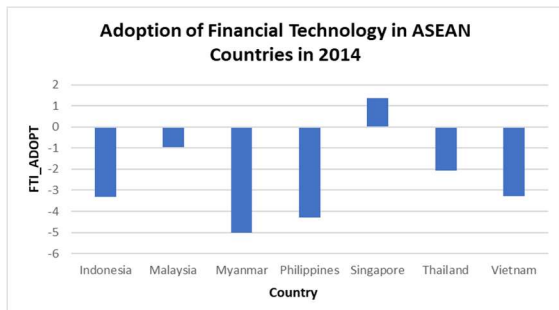
Figure 4. Adoption of Financial Technology in ASEAN Countries in 2014

In 2014, the highest country for financial technology adoption was Singapore with a value of 1.355. Meanwhile, countries which have very low

fintech adoption values were still Myanmar and the Philippines with -5.026 and -4.302 values, respectively. Indonesia in 2014 also still had a low level of adoption of financial technology, which was -3.320.
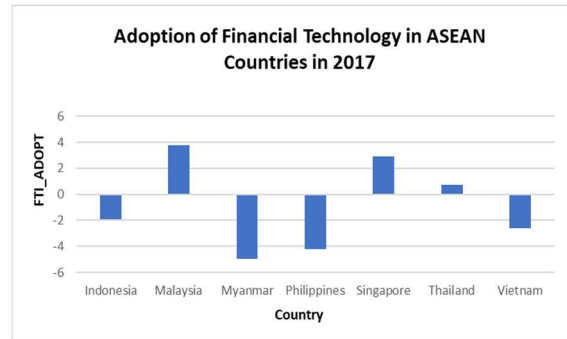
Figure 5. Adoption of Financial Technology in ASEAN Countries in 2017

In 2017, the highest country for financial technology adoption was Malaysia with a value of 3.793 and Singapore reached of total value of 2.915. Meanwhile, countries which have very low fintech adoption values were still Myanmar and the Philippines with -4.946 and -4.199 values, respectively. Meanwhile, Indonesia in 2014 also still had a low level of adoption of financial technology, which was -1.915 which showed a slight increase compared to previous years.
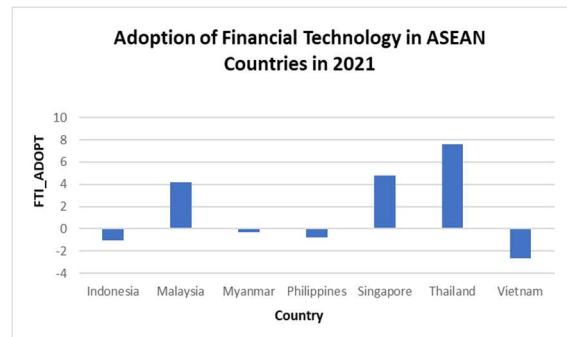
Figure 6. Adoption of Financial Technology in ASEAN Countries in 2021

In 2021, the highest country for financial technology adoption was Thailand with a value of 7.611, Singapore and Malaysia reached the total value of 4.770 and 4.209. Meanwhile, countries which have very low fintech adoption values were still Vietnam and Indonesia with -2.670 and -0.741 values, respectively.

6. DISCUSSION

This study examines the relationship and influence of variables Facilitating Conditions of Financial sector (FAS_FIN), Facilitating Conditions of non Financial sector (FAS_NFIN), Overall Valuation on Business Climate (BUSS), Social Conditions (SOC) and GDP as a control variable towards the adoption of financial technology across countries from modifications of the UTAUT framework as novelty. The analysis of this research revealed the following findings:

Financial development is a major component of overall economic development, and plays a role in driving growth. The economic growth of a country will encourage the adoption of financial technology in the country to be more advanced. According to [48], digital technology creates value not only in the banking sector, but also reaches all possible areas of the financial sector. Fintech, formed based on technology and finance, will continue to lead a business in the direction of digitization, through the combination with other available resources such as organizational, environmental, and strategic factors which can create business values. This development towards digitalization will increase the country's financial inclusion program. Financial inclusion in a country can be said to be going well if the people are able to have access to transaction accounts, allowing them to save money, send and receive payments quickly, easily and safely. Fintech companies being established to enhance the financial services are currently offered by traditional financial institutions and today fintech is a global phenomenon with strong international players from Silicon Valley to London, Hong Kong, Beijing, Sydney and Singapore [46]

In the appendix of this paper, research data has been described in a line graph showing countries which have the highest and lowest levels of financial technology adoption. However, in the line graph, there are limitations in the input process because the number of country samples used is quite large, namely as many as 125 countries, so it cannot be displayed in its entirety. The highest adoption of financial technology in 2011 was owned by Kenya and Sweden, which scored 8.587 and 8.483 respectively. Meanwhile, the country with very low adoption of financial technology is Afghanistan with -4.836. In 2014, the highest adoption of financial technology was owned by Australia which scored 6.106 and 8.483 and Kenya decreased in value compared to the previous year which was 5.309.

Meanwhile, the country with very low adoption of financial technology is Tajikistan with -5.107.

In 2017, the highest level of adoption of financial technology was achieved by Kenya and Norway which scored 12.840 and 12.581 respectively. Meanwhile, the lowest value among the 125 sample countries was Myanmar with a value of -4.946. Finally in 2021, the countries with the highest adoption rates of financial technology were represented by Mongolia and Kenya at 15.546 and 11.430 respectively. Meanwhile, the country with very low adoption of financial technology was Afghanistan with -4.916.

In the attachment of this paper, the authors also present a graphic description of the Facilitating Conditions of Financial sector, Facilitating Conditions of non Financial sector, Overall Valuation on Business Climate and Social Conditions (SOC) in the sample countries of this study.

6.1 Facilitating Conditions of Financial Sector (FAS_FIN) has a positive relationship and influence on the adoption of financial technology in a country.

Based on the results of the Fixed Effect Model (FEM) accepted in this study, the facilitating conditions of financial sectors consisting indicators of liquid liabilities, international debt issuance, central bank assets, stock market capitalization, stock price volatility has a significant effect on the adoption of financial technology which can trigger economic growth and business in a country, supporting hypothesis 1 formed in this study.

The influence of the financial sector with the selected indicators strongly supports the facilities of the financial sector in a country with positive results of regression relationship to the adoption of fintech. Supported research conducted by [7], said that one of the many reforms carried out is in the economic sector by intervening in the financial sector. Financial innovation with the use of new technology has become a new instrument which triggers financial growth and ensures financial stability for the good of financial consumers in countries [31]. Fintech includes digital innovation and technology-based business model innovation in the financial sector. Fintech can reduce the risk of financial instability through decentralization, diversification, increased transparency, increased efficiency, and increased convenience of financial services [32]. In

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fact, financial innovation encourages a country to prioritize fintech adoption.

According to [28], the development of the stock market will increase diversification and liquidity, increasing the amount invested in higher return and higher risk projects. Stock market performance can be expected to drive more investment, economic growth, and energy demand, as it makes more funds available for investment projects. The study in [29]explains the relationship between financial growth and current liabilities. Financial developments and increasing liquid debt have accelerated economic growth by prioritizing resource efficiency. Development in financial technology has encouraged central banks to constantly evaluate their role, by introducing new central bank assets and liabilities, and changing their approach to monetary policy decision making and implementation. The role of the Central Bank's digital currency is important for monetary policy and promoting the welfare of the people in the country. The role of the Central Bank's digital currency is important for monetary policy and promoting the welfare of the people in the country.

Equity market volatility is undermining the ability of financial markets to effectively and efficiently mobilize financial resources and invest in viable investments to support economic growth and development index [30]. Financial innovation with the use of new technology has become a new instrument which triggers financial growth and ensuring financial stability for the good of financial consumers in countries [31]. Stock market development and stability is the fulcrum of economic, financial and business development globally. It is a subset of the capital market financial system facilitating financial intermediation of funds mobilization and allocation for long and medium-term capital creation, socio economic, financial and business development. Equity market volatility effectively and efficiently mobilizes financial resources into viable investments to spur economic growth and development in emerging markets facing economic, financial and political instability. Undermining the financial market process to invest is affecting the decline in growth and development indicators [30]. [16], it is stated that the economic forces driving fintech adoption across countries, where fintech helps make the financial system more inclusive and efficient, could benefit economic growth.

Nevertheless, conflicting research exists from research in [49] which suggests that the relationship between the financial sector and growth can turn negative for high income countries, where the financial sector begins to have a negative effect when credit to the private sector reaches 100% of GDP. They show that their results are consistent with the ''vanishing effect'' of financial development and that they are not driven by output volatility, banking crises, low institutional quality, or by differences in bank regulation and supervision.

6.2 Facilitating Conditions of non Financial Sector (FAS_NFIN) has a negative relationship and influence on the adoption of financial technology in a country.

In the current digitalization era, ICT, infrastructure, logistics performance are very supportive and play important roles for all activities in the use of financial technology supported by the COVID-19 pandemic which requires speed and security in the use of technology to carry out its functions properly.

Information and Communication Technology (ICT) and infrastructure plays a substantial role in catalyzing economic growth, especially in today's era of internet and mobile telecommunication [50]. Regarding Logistic Performance Index according to [36], LPI is a good predictor of gross domestic product (GDP) performance which confirms that improving a countries' logistics system has a positive effect on countries' wealth. However, the results obtained in this study suggest that FAS_NFIN produces a negative effect. This negative influence cannot be separated from the negative impacts of ICT in the form of user data security threats, cybercrime, ransomware, malware, and copyright infringement that we often find in our daily lives in the use of mobile financial technology. In addition, [3]stated that basically fintech has high operational costs at the beginning of its use. Therefore, in some countries fintech is still known as a new system which needs adaptation for the community or its users who need literacy and expertise to use fintech to prevent crime and fraud in financial technology by the perpetrators. Although fintech continues to grow rapidly, it cannot be denied that there are weaknesses that fintech companies have not yet been able to resolve. Therefore, it is feared that they will harm consumers. In general, the risks that may arise from fintech companies in Indonesia are the risk of fraud, data security risk (cyber security), and risk of market uncertainty (market risk) [51].

The first vulnerability to note concerns consumer personal data. Technology can save lives if used correctly. However, if its use is unrestricted, for example, there is no active legal obligation to regulate the details and provide sanctions for non-compliance with personal data. Technology can be very dangerous if it is not protected. Risks include theft of personal data, damage to systems which allow data breaches (including personal data), and the loss of personal data controlled by the business itself or other parties with access to consumer personal data, such as governments. It can also result from abuse. Therefore, the urgency of the need for regulation related to the protection of personal data is considered important because personal data is a person's privacy, as well as being fundamentally of economic value for third parties who want to use it [52]. Meanwhile, according to [53], another weakness related to fintech is that digitalization and automation are the main characteristics of fintech, making it very vulnerable to online crimes such as wiretapping, burglary, and cybercrime (fictitious transactions, carding/using other people's credit cards, fraud in the marketplace). Furthermore, another weakness is that not all fintech service providers have the license to collaborate with banking institutions, both conventional and sharia or conduct financial transactions in a systematic and legal manner. As a consequence, it is possible to practice abuse of authority or transactional irregularities, which will harm the banking institution itself.

6.3 Overall Valuation on Business Climate (BUSS) has a positive relationship and influence on the adoption of financial technology in a country.

The third variable, namely Overall Valuation on Business Climate (BUSS), consists of electric power consumption, electricity production from renewable sources, and CO2 emissions which produce a significant positive effect on the adoption of financial technology which triggers economic growth in a country. These results are similar to the third hypotheses which have been set in the discussion in the research of [38] mentioned that energy consumption plays an important role in economic growth and also economic growth encourages energy use. Increasing the share of clean energy and implementing energy efficiency must be one of the most effective ways to reduce CO2 emissions in order to maintain economic growth. This is also supported by research conducted by [5] which said that fintech refers to innovations in the financial system and other infrastructures that also affect many aspects of the economy, society, and energy.

According to [37] in developing regions such as China, Russia, and Indonesia, production-based energy consumption is higher than consumption-based energy consumption. Energy consumption results from final production-based billing, which depend not only on the upstream energy intensity of all participating countries, but also on the inter-regional production network, showing different profiles across countries. Next, there are indicators of CO2 emissions from gaseous fuel consumption. The study in [38] found a causal relationship between energy consumption and economic growth. China government carried out a policy of economic restructuring by reducing the industrial market share in energy in the economy with the aim of reducing CO2 emissions. At that time, China continued to strive to reduce its energy consumption, especially fossil energy for the sake of reducing CO2 emissions, which was done by adjusting the structure of energy consumption through increasing the share of clean energy, such as natural gas, nuclear power, hydropower and renewable energy. In addition, [38] mentioned that energy consumption plays an important role in economic growth and economic growth encourages energy use. According to [5], fintech can influence consumption emissions and environmental policy by influencing economic growth. China's long term and broad economic growth pattern is a key reason for its U-shaped relationship between fintech and sustainable development. Thus, under the influence of fintech innovation, economic growth first rose and then declined, while the level of sustainable development first showed a downward trend and then an upward trend. Fintech has an inverted U-shaped relationship with economic growth, but as a technology-driven financial innovation, fintech has the advantages of traditional financial innovation in terms of increasing financial demand, reducing the cost of financial services, and improving finance. This finding indicates that it is not comparable to boost economic growth more efficiently and effectively.

In [5] findings suggest that fintech has the effect of both promoting and constraining economic growth and social development, and can provide suitable financing services for energy and environmental projects. Economy, society and environment are key elements of sustainable development. Sustainable development not only meets current needs, but also benefits future generations. This is a form of development which encompasses many aspects of

economic growth, social development, consumption emissions, and environmental policy.

Countries at new stages of development should therefore pay more attention to sustainable development rather than just focusing on a single indicator such as GDP. Fintech is a key driver of sustainable development. The development process should drive the building of a comprehensive regulatory sandbox for fintech. At the same time, we need to increase R&D investment in the underlying technologies required for fintech, improve innovation efficiency, reduce low-efficiency imitative innovation, and expand high efficiency fintech.

6.4 Social Conditions (SOC) has a negative relationship and influence on the adoption of financial technology in a country.

The fourth variable, namely Social Conditions (SOC), which consists of employment to population ratio, agriculture, forestry, and fishing, value added, birth rate, death rate and population in urban apparently has a negative significant effect on the adoption of financial technology in a country. Objective indicators are measures based on the frequency and external characteristics of a person. These are real world conditions such as the physical environment, economic, or technological factors. Social indicators are often used as objective measures of quality of life. According to [39]quality of life is related to the description and evaluation of conditions or living conditions of people in a particular country or region.

In addition, [39] also revealed that objective indicators sometimes do not accurately reflect people's experiences of well-being and an individual's sense of well-being is a much more complex experience and is determined in several ways than descriptive social indicators based on external circumstances in a society assume. Therefore, it is important to take into account the subjective well-being of the person concerned. When addressing urban quality of life, the subjective dimensions of quality of life refers to perceived well-being, livability, health, etc. Subjective indicators are primarily based on psychological responses such as life satisfaction, job satisfaction, and personal well-being. In the current era of globalization, both urban and rural communities already have internet access and access to mobile finance. In this case, adoption of financial technology does not depend on their social conditions.

The rate of economic growth can be seen from the increase in real GDP from year to year. If GDP increases, the economic growth is getting better. If the average rate of economic growth from year to year is higher, the income per capita of the community will also be higher. According to [54] growth economy is defined as an increase GDP (Gross Domestic Product) regardless of the increase is greater or less than population growth, and regardless of whether there is a change in the structure economy or not. Growth aspect economy plays a role most important as an indicator development of a country. In fact, it is not uncommon for economic growth to be identified with welfare and standard of living.

Most of the components in this economic growth consumption oriented the estimated national income. This consumption component is considered more important than components income because this component will directly have big influence on level community life. Level calculation economic growth of a country/region is obtained by comparing national production gross (GNP) from year to year. From this calculation, numbers that describe the level progress of economic activity a country will be obtained.

7. CONTRIBUTION, LIMITATIONS, AND FUTURE RESEARCH

7.1 Theoretical Contributions

This study has added information on the factors of adoption of financial technology across countries and made important theoretical contributions. First, this research is an empirical study which identifies factors from the UTAUT model which have been modified and adapted to this research through real measurements and conditions from the sides of the financial sector, non-financial sector, overall valuation on business climate, and social conditions of the country which sourced from data in FINDEX, GFDD and WDI which are expected to encourage the adoption of financial technology in the country. This model can assist researchers and the government in identifying and working on various ways to increase fintech adoption in the future from various sides so that financial inclusion programs in the country can increase.

Limitations in research in this field, especially in Indonesia, include the fact that most of the previous research has only focused on comparing the level of use of fintech products within a country and across countries without identifying the factors which

influence and support the use of financial technology. Therefore, this research is expected to add sources and insights on how financial technology can be improved through internal factors which affect the country. Several researchers have examined the adoption of financial technology across countries, but none of them has used and modified the UTAUT model as a means of identifying actual internal condition factors in a country other than [5], [14], and [55]who conducted almost the same research by using real macro indicators in supporting the use of fintech between countries. Therefore, this study suggests that the UTAUT model initiated by [12]which is generally used to identify the level of personal/institutional use of technology, can also be useful in identifying and describing the internal conditions of a country.

The emergence of the phenomenon of disruptive innovation in the field of financial technology is expected to create an innovative financial service system that is safe and easily accessible by the wider community at an efficient cost so that it is hoped that it can help recover the national economy and increase inclusion programs in the country. With these developments and opportunities, it is very relevant to develop this research model into a comparative study in the future to overcome the various limitations contained in this research.

7.2 Practical Contributions

Education regarding the use of financial technology continues to be carried out by the government, especially in Indonesia at this time which is expected to support the national economic recovery program. As in the 2022 Indonesia Fintech Summit and the 2022 National Fintech Month Bank Indonesia (BI), the Financial Services Authority (OJK), the Indonesian Fintech Association (AFTECH), and the Indonesian Joint Funding Fintech Association (AFPI), are collaborating to present the annual National Fintech Month educational program (BFN) 2022 which has successfully educated more than 1.5 million people.

Minister of Communication and Informatics of the Republic of Indonesia, Johnny, stated that "the decline in digital start-up funding flows in the Asian region reached 60% year on year and 33% quarter to quarter in the third quarter of 2022. However, the sector's transaction value fintech Indonesia, with a Compounded Annual Growth Rate (CAGR) of 39%, is the second highest among the G20 countries. This superior performance shows that Indonesia is able to respond progressively to the Covid-19 pandemic as a

momentum to accelerate the digitization of the financial services sector in Indonesia". Based on this data, it is also stated that with a CAGR of 15% for 2022 to 2027, the prognosis is that the transaction value of the global fintech sector is estimated to reach USD 28 trillion in 2027. This optimistic condition is also experienced or projected by the Indonesian fintech sector. The gross transaction value for the digital payment sector is in the range of USD 266 billion and is projected to reach around USD 431 billion in 2025 with a CAGR of 17% [56].

Apart from Indonesia, this finding of course also applies to other countries. The government, associations and industry players need to work together to increase public awareness regarding the adoption of a financial technology, starting with education, adequate financial literacy, and expertise in using these fintech products to help stabilize the national economy. The findings of this research are useful for many parties, especially the government, industry, society and other academics to develop knowledge in adopting financial technology. First, for the government, through the findings of this study it is hoped that it will be able to provide input as well as factors that have an important role and encourage economic growth in a country so that it can increase the goal of adopting financial technology from the financial, non financial sectors, overall valuation on business climate and social conditions in the country. Second, the fintech industry is expected to be able to provide new programs or collaborations in the country and abroad which can expand the reach of fintech. Furthermore, it can provide additional information to increase the introduction of fintech adoption to all people in the country through technological sophistication which supports educational programs and maintains data security. The financial use of it is important in fintech adoption, where cybercrime and phishing are rife which can threaten fintech users. Third, the public is expected to be able to provide new knowledge where social conditions are no longer a barrier to develop in the current era of globalization and to be able to start accepting any new breakthroughs along with education provided by the government and the fintech industry. Fourth, academics and future researchers are expected to become additional sources of new knowledge and information regarding the adoption of cross-country financial technology by trying to use different models in order to analyze the factors that can encourage people in a country to increase the adoption of financial technology. As a result, it can help the economic growth in the country.

7.3 Limitations and Future Research

This study has limitations in which future researchers can continue the research development. First, the number of samples of country data and real indicators used are still limited because it is based on the research process and the real indicators used refer to the UTAUT factors. The researchers realize that this research reflects the novelty of this research. The indicators chosen are also based on the completeness of the research data samples found in the FINDEX, GFDD and WDI data sources on the World Bank website which, considered as a whole, do not cover and describe specifically the UTAUT factors used, because researchers only use a few indicators which can represent variables by adjusting the completeness of the data from the three sources.

The second point is the limitation of the research years because FINDEX, GFDD and WDI data to describe the dependent variable indicators of FTI adoption available are only 2011, 2014, 2017 and 2021, while there are values in 2021 which are not comprehensively complete. Therefore, the researchers allocate the final 2020 value for 2021 in one of the files in the GFDD. The third point is the methods of data analysis which are still limited in processing and analyzing cross country study data. Further researches are expected to be able to increase the sample data from other indicators which can support of non financial facilities (FAS_NFIN) in a country so that these factors can be one of the triggers for the growing level of adoption of financial technology in developed and developing countries and expand information or data sources by adding supporting indicators from the variables FAS_FIN, BUSS and SOC, and always update their values every year on the official website of the World Bank.

8. PROBLEMS AND OPEN RESEARCH ISSUES

According to [27], financial technology has emerged in recent years in all major regions of the world, both developed and emerging. One in the fintech category, "big tech," has become increasingly important as a payment provider in some countries but not in others. For example, recent data show that high-tech mobile payments account for 16% of GDP in China but less than 1% in countries such as the US, India, and Brazil. In [50], according to the annual fintech 100 report published by KPMG, China and the US are the leading countries in fintech startups and companies, including 25 payment and trading companies, 22 lending companies, 14 wealth management companies, and 7 insurance companies.

Furthermore, according to the [9], 76 percent of the world's population and 71 percent of people in developing countries have accounts worldwide. Receiving digital payments such as payroll, government telegraphs, and domestic telegraphs encourages the use of other financial services such as money storage, savings, and borrowing. To conduct this research, the author proposed [12], namely the Unified Theory of Technology Acceptance and Use (UTAUT) framework. The UTAUT model explores determinants such as user acceptance and usage behavior, consisting of performance expectations, effort expectations, social influence, and facilitating conditions, and finds that these four factors directly or through behavioral intentions influence the individual who is used. However, in this study, the authors use the UTAUT framework to develop research innovations on fintech adoption across countries.

The authors acknowledge that the UTAUT framework is generally used to analyze individual behavior and the conditions of an organization. But in this study, the authors hope to find a new study of a modification of the UTAUT framework that is expected to be able to explain and describe the introduction of transnational financial technology based on data from an indicator that supports economic stability and country characteristics. Through this framework, the authors wanted to analyze the relationship between each variable and the application of financial technology in different countries using panel regression data collected at least square, fixed-effect model (FEM), and random-effects model (REM), and the specification tests are Breusch, Pagan, Chow, and Hausman, with the availability of cross-country datasets updated every few years. The study will produce new research that uses the modified framework of the UTAUT model that comes from a micro perspective, then explain fintech from a macro perspective for countries to identify characteristic assessment and determination of the supportive factors for the economic growth of a country influenced by many factors to analyze the adoption of financial technology in a country, where this original framework has been developed by [12], which can help further researchers in improving the financial inclusion program.

In the database available on the World Bank website in FINDEX, GFDD, and WDI data, it supports the writing of this paper because in each of

these databases there are many categories that can explain the adoption of financial technology through macro indicators that are real and have their respective categories, according to the variables used in this study, such as supporting indicators for the financial sector, non-financial sector, changes in the business environment, and social conditions in the country, which are influenced by GDP in triggering economic growth in the country.

9. CONCLUSIONS

This study is written with the aim of analyzing the relationship and influence of the variables of the UTAUT factors which have been formed and modified by the authors into Facilitating Conditions of Financial Sector (FAS_FIN), Facilitating Conditions of non Financial Sector (FAS_NFIN), Overall Valuation on Business Climate (BUSS), and Social Conditions (SOC) to determine its effects on the adoption of financial technology in developed and developing countries through real indicators. This study has a sample of 125 countries with a total of 500 observations. Meanwhile, this research data is panel data sourced from secondary data which then forms a dataset, including real indicators to describe all variables used, sourced from The Global Financial Inclusion Survey (FINDEX), Global Financial Development Database (GFDD) and World Development Indicators (WDI), which has been described in section 3 data and research methodology. The data testing method uses Pooled Least Square (PLS), Fixed Effect Model (FEM), Random Effect Model (REM) with Breusch Pagan, Chow and Hausman test specifications and robustness check using STATA 15 software.

Based on the results of the Pooled Least Square, Fixed Effect Model (FEM) and Random Effect Model (REM) tests through further specification testing, the Breusch Pagan, Chow and Hausman tests, in this study the Fixed Effect Model (FEM) was chosen. The result of the FEM test suggests, among the four independent variables in this study, variables which has a significant effect are Facilitating Conditions of Financial Sector (FAS_FIN) and Overall of Business Valuation (BUSS) while Social Conditions (SOC) have a negative effect. Domestic Product Growth (GDP) as a control variable has a significant effect as well. Based on the robustness test which has been tested, referring to the algebraic sign and significance value, the variables FAS_FIN, FAS_NFIN, BUSS and SOC are robust.

Based on a comparison of several samples included, ASEAN countries which have the highest technology adoption rates are Singapore, Malaysia and Thailand. The adoption of financial technology can help the country in achieving its financial inclusion program. The proof of the results of this study is in line with the news phenomenon which has been published by [1] stated in section 1 of the introduction. In this case, the level of financial inclusion in the ASEAN regions is as follows: Singapore has reached 98%, Malaysia 85% and Thailand 82%. Meanwhile, countries which have a low level of adoption of financial technology are Indonesia, Myanmar, Philippines, and Vietnam. Based on a sample of 125 countries used in this study, the countries which have the highest level of adoption of financial technology are Kenya, Australia, Sweden, Norway, and Mongolia. On the other hand, the countries which are always in the lowest position are Afghanistan, Tajikistan, and Myanmar.

Fintech has played a major role in increasing the level of coverage of financial services in a country. Thanks to digital technologies such as software, the internet, and mobile phones, fintech companies have made it easier for more citizens to save money, borrow, pay, and receive payments. At this time, in Indonesia there are at least 5 million agents of fintech and e-commerce companies which serve residents in paying for water and electricity, and conducting transactions for daily needs. Due to the spread of agents which have reached rural areas, it is recommended that the government cooperate with other fintech networks to improve the quality of assistance services and especially expand cooperation with credit and loan providers.

Fintech is built within society's ideal ecosystem, infrastructure, and culture. Fintech adoption rates are very high in regions and countries where infrastructure (internet networks) is in place, people are familiar with digital lifestyles, and they have access to devices to use fintech products and services. On the other hand, these ideals are not found in developing countries, regions, or countries. Low public revenues, limited infrastructure, little public awareness, low digitization, and economically unregulated societies make it easy for fintech to enter the industry. These features also limit access to legitimate financial institutions. Fintech, as an innovation, aims to provide solutions to those who are neglected by the formal financial system.

Most of the fintech development is still concentrated in developed and some developing countries, where choice and access to financial products and services are fundamentally abundant. This is not surprising given the infrastructure that supports fintech development in developed countries, such as internet access, and also has relatively high levels of financial literacy and integration with financial institutions, making it easy to see the use of fintech as an alternative in various parts and providing comfort and efficiency to the community. Financial products and services offered by fintech providers must be compatible with existing technology in developing countries so that they can serve as an alternative to those offered by formal financial institutions. Fintech in underdeveloped areas can be a key factor in facilitating economic growth for people in these areas as well as increasing access to financial services for those in urban areas.

This creates gaps for informal financial service providers that are easily spotted by the lower middle class. Regarding productive investment in the agricultural sector, a profit sharing system has been introduced, which often puts a burden on farmers. In terms of payment systems, cashless payments are nonexistent or difficult to access, so communities rely heavily on cash payments, limiting economic activity. If this situation persists, it will lead to costly economic activities and provide incentives for lower and middle income communities to engage in productive activities. And in the end, this inefficient economic activity cannot grow the economy properly. Fintech developments that have emerged to date, are based in developed countries, and are already approaching market potential may not all be leveraged in developing or underdeveloped countries. But fintech, which is considered a consumer-focused fintech innovation, needs to be able to adapt to the situation in this country. Its presence must reach consumers who cannot be reached by formal financial institutions.

According to [57], the financial literacy of Indonesians is still low. Bank Indonesia hopes that financial literacy and consumer protection will improve as digital technology spreads. Regarding consumer protection, Bank Indonesia has a strategic framework for action, including regulation and policy, oversight, education and literacy, and complaint handling. According to the 2019 OJK survey, the average financial literacy level of Indonesians remains low at just 38 percent. Currently, the average level of financial inclusion is 76%. The causes of financial adoption in Indonesia are still very small due to infrastructure problems, the availability of telecommunication facilities, and an evenly distributed and widespread infrastructure in Indonesia [58]. Therefore, policymakers and financial institutions in Indonesia continue to focus on public exchange and education so that financial inclusion programs can be scaled up from time to time through the introduction of financial technology.

Based on the data in [59], digital tools were launched in Myanmar in 2018. It is Myanmar's fastest growing mobile wallet, KBZPay, enabling people in remote cities to access everyday financial and digital services for millions of people. With just 10% of Myanmar's population having bank accounts and 90% having smartphones, KBZPay facilitated one million transactions in April 2019. Myanmar's financial institutions' efforts to improve financial inclusion consist of expanding digital infrastructure and financial services that are not yet widely accessible to the public. Although Filipinos digital activities increased during the pandemic, including payments, e-commerce, telemedicine, and online education, the fintech adoption rate in the Philippines remained relatively low compared to other ASEAN countries. This is because the digital divide between those who have internet access and those who do not has led to unequal access to social services and economic opportunities. In addition, Internet connectivity in rural areas remains limited, and when Internet service is available, it is relatively expensive and of poor quality. The Philippines is also hampered by a lack of competition and investment restrictions in the telecommunications market. These restrictions include designating public telecommunications companies to limit foreign ownership and earnings.

Based on the data according to [60], the Vietnamese government is promoting a cashless society and is trying to provide banking services to local individuals and companies. The government facilitates access for Vietnamese startups by providing training and advice to technology-based startups. This development is also underpinned by cooperation between fintech companies and banks in the provision of products and services, and Vietnam's economic development will continue to develop positively in the future. Vietnam's digital economy potential has attracted the attention of many venture capitalists, and in recent years the country has become a hot investment destination for technology companies. From 2018 to 2020, the capital invested in Vietnam reached US$1.2 billion. In addition to the

digital economy, investments are also pouring into fintech, retail, and education. From 2009 to 2019, Vietnam's GDP grew at an average annual rate of 7%. In 2020, Vietnam will be one of the few countries to record GDP growth of 2.9% [61].

On the other hand, Afghanistan's efforts are similar to those of other countries. Based on data from [62], the Bank of Afghanistan is leading the National Financial Inclusion Strategy, improving access to finance in key sectors of the Afghan economy and increasing formal household and private sector access, including payments and digital services. It is intended to facilitate the financial services of the sector. Many international and regional organizations invest time, effort, and money to help countries and their citizens. These include four microfinance institutions that make more than 130,000 loans a year to people who are ineligible for loans from the traditional banking sector. Based on a study from the Afghanistan Microfinance Investment Assistance (MISFA), which analyzed the impact of microfinance interventions over a period of four months in 2018/19, the microfinance sector has been underperforming as foundations work for the poor and was shown to have a positive impact on Afghan society. In addition to facilitating the growth of small businesses. According to the Findex Global Database, 30% of people (15 and older) living in Afghanistan do not have bank accounts because financial institutions are too far away.

Additionally, based on data from [63], Alif Bank founder Abdullo Kurbanov said high tax rates are a major obstacle to starting a startup in Tajikistan. Alif Bank is a microfinance organization founded in 2014. In 2020, the National Bank of Tajikistan (NBT) increased its status to full bank and has more than 800 employees in Tajikistan and Uzbekistan since it started operations in 2014 with only three employees. According to Fintech Financial News, the market capitalization of Alif Bank is expected to reach $100 million by 2021. Meanwhile, Tajikistan has made slow but stable progress in promoting government-backed start-ups for business development in the field of technology (IT), which will provide a major boost to start-up companies. At the same time, there are also startups in Indonesia that have stopped operating after funds were frozen and are still waiting for investors. In addition, most of the existing startups were established outside of Tajikistan, and these projects had already begun domestically, but the process was extremely difficult because of unnecessary controls, robbery, and intimidation. Deteriorating economic conditions, talent shortages, monopolies, and a lack of proper start-up conditions also hindered the development of fintech at the time.

10. ATTACHMENTS

The following are attachments to country charts which can describe the levels of Financial Technology Adoption, Facilitating Conditions of Financial Sector, Facilitating Conditions of non-Financial Sector, Overall Valuation on Business Climate, and Social Conditions. However, there are limitations in the process of inputting the entire sample of countries in large numbers according to the sample so that as shown in the graph below, only a few representative countries can be included in the graph.
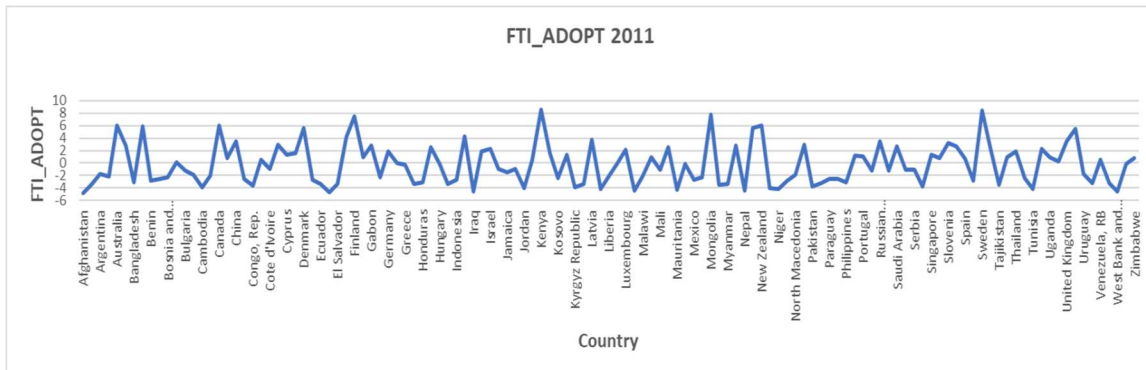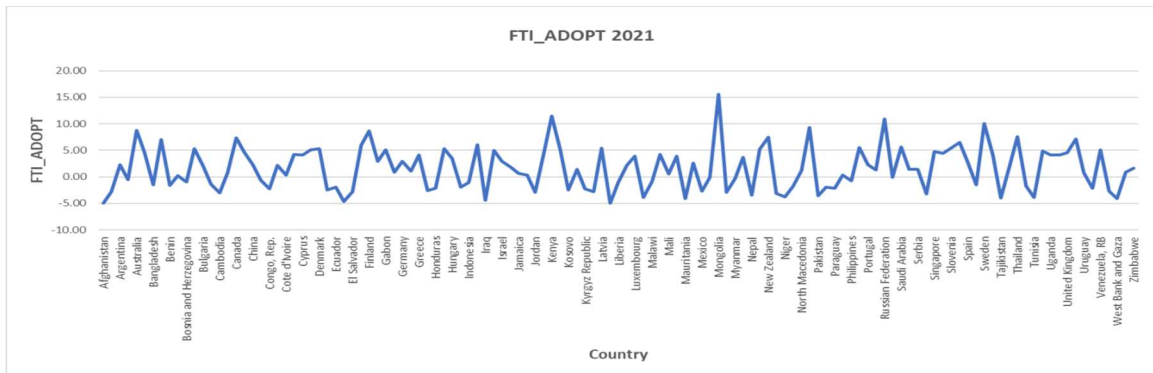

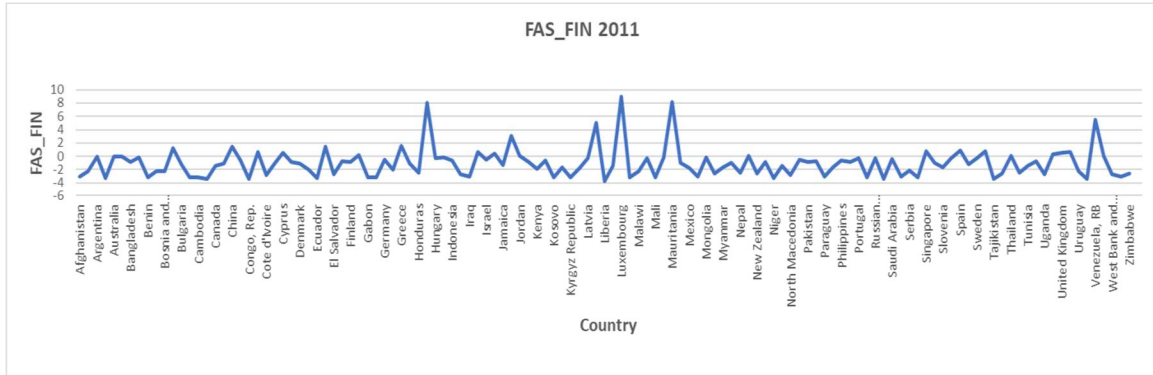*Attachment 1. Financial Technology Adoption 2011*
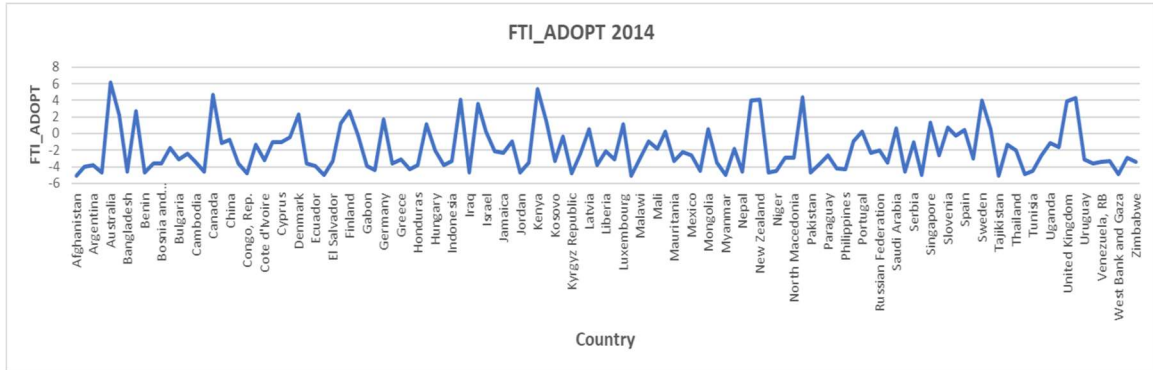
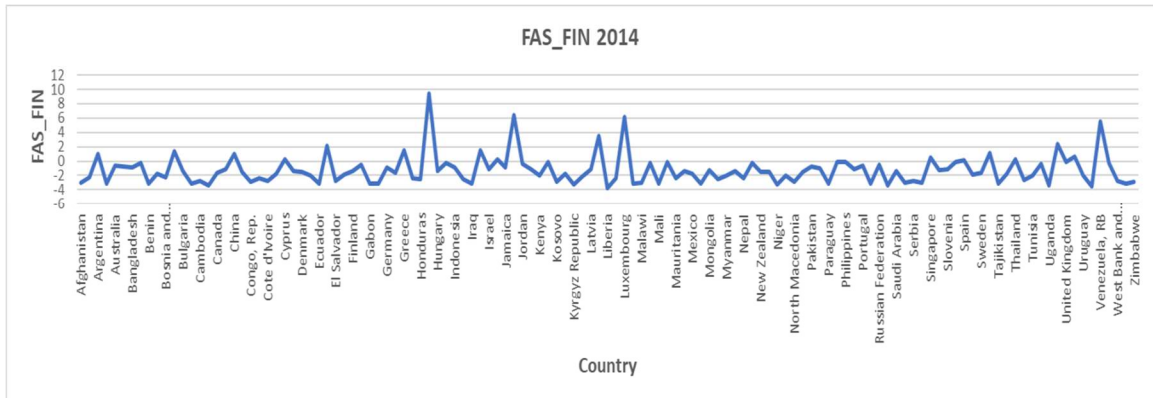*Attachment 2. Financial Technology Adoption 2014*
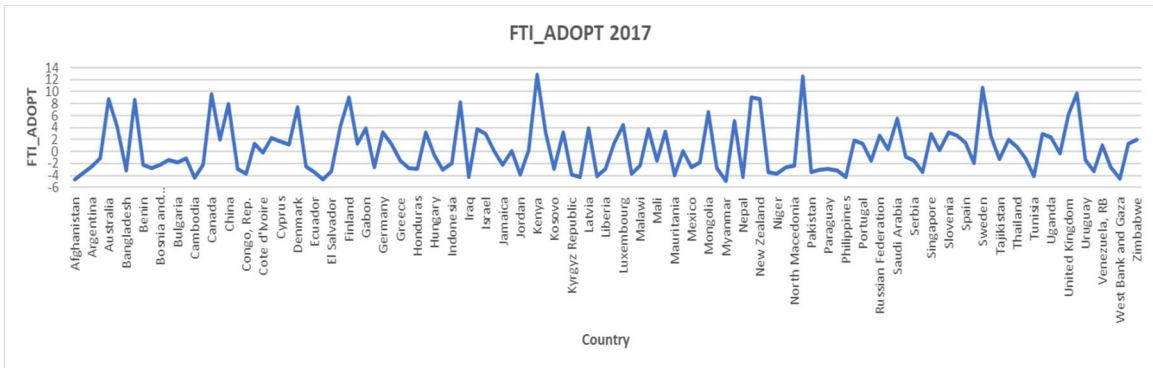
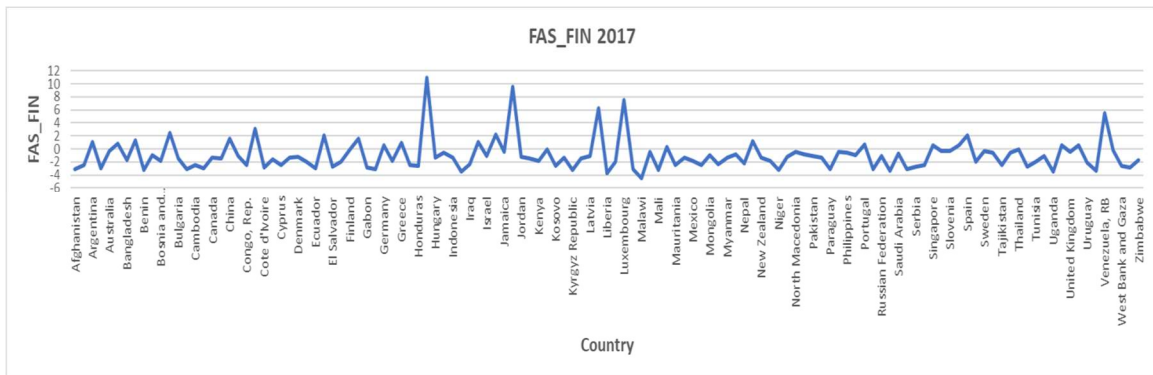*Attachment 3. Financial Technology Adoption 2017*

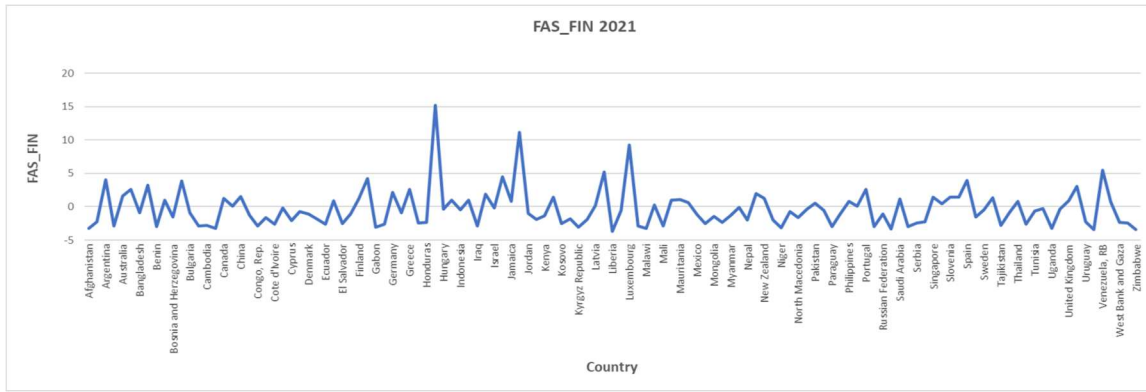*Attachment 4. Financial Technology Adoption 2021*

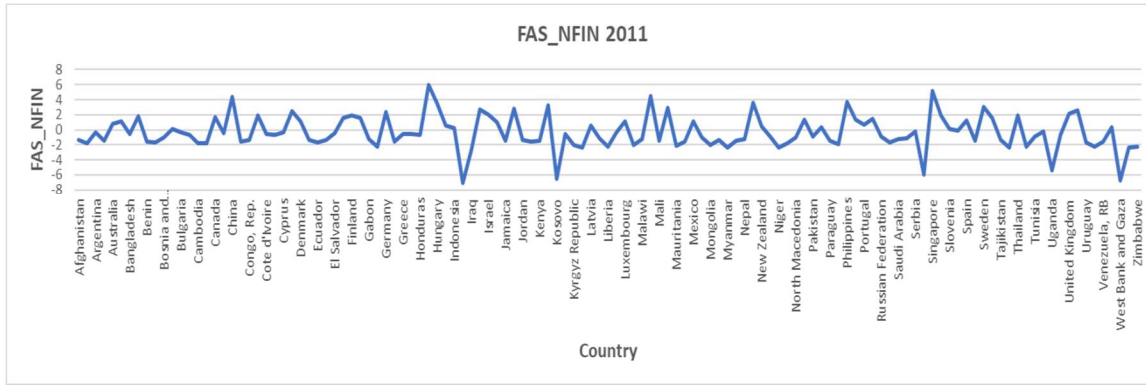*Attachment 5. Facilitating Conditions of Financial Sector 2011*

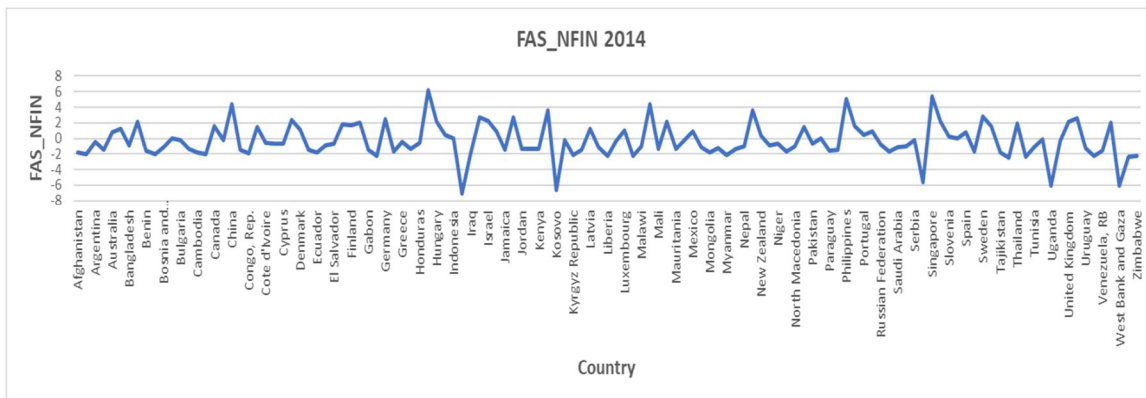*Attachment 6. Facilitating Conditions of Financial Sector 2014*

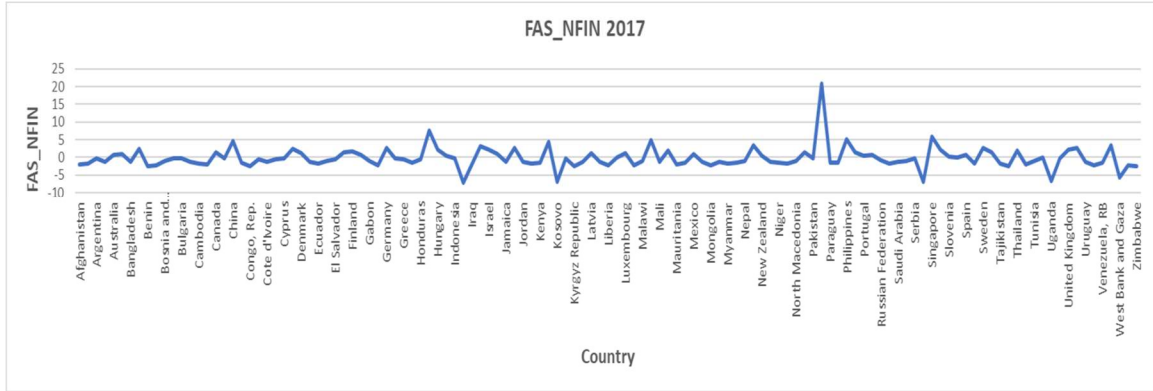*Attachment 7. Facilitating Conditions of Financial Sector 2017*

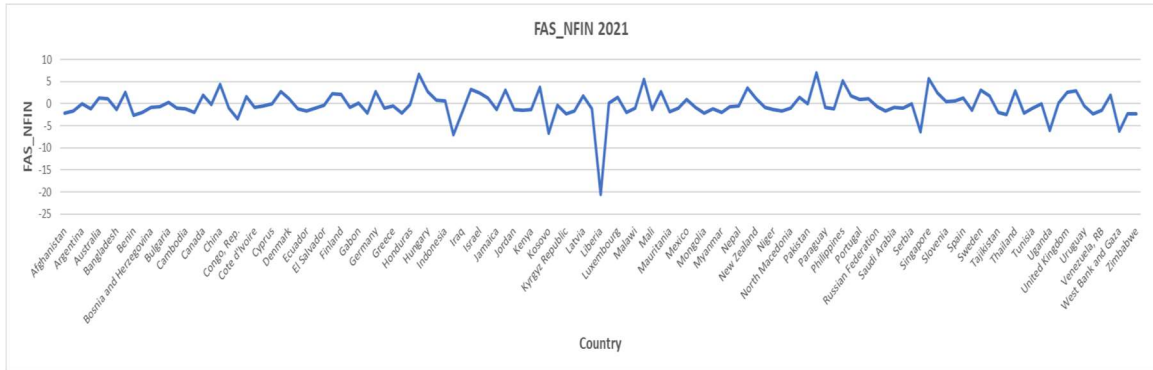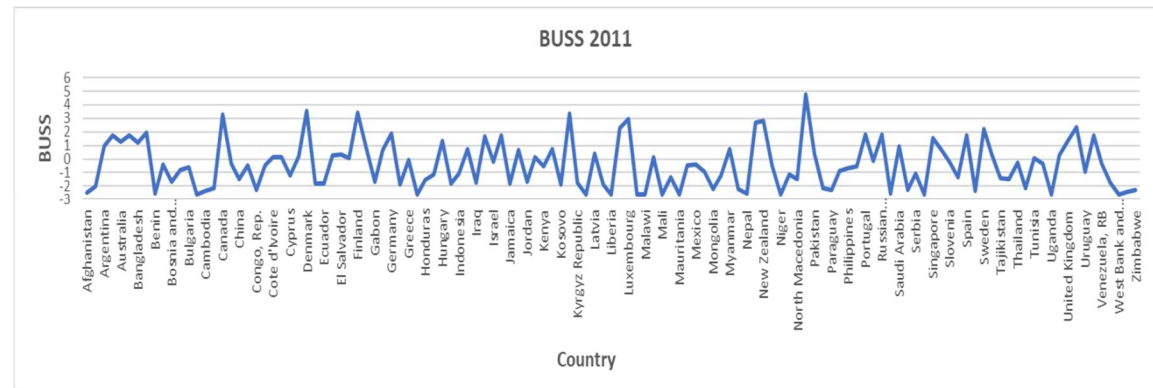*Attachment 8. Facilitating Conditions of Financial Sector 2021*

Attachment 9. Facilitating Conditions of non-Financial Sector 2011

Attachment 10. Facilitating Conditions of non-Financial Sector 2014

Attachment 11. Facilitating Conditions of non-Financial Sector 2017

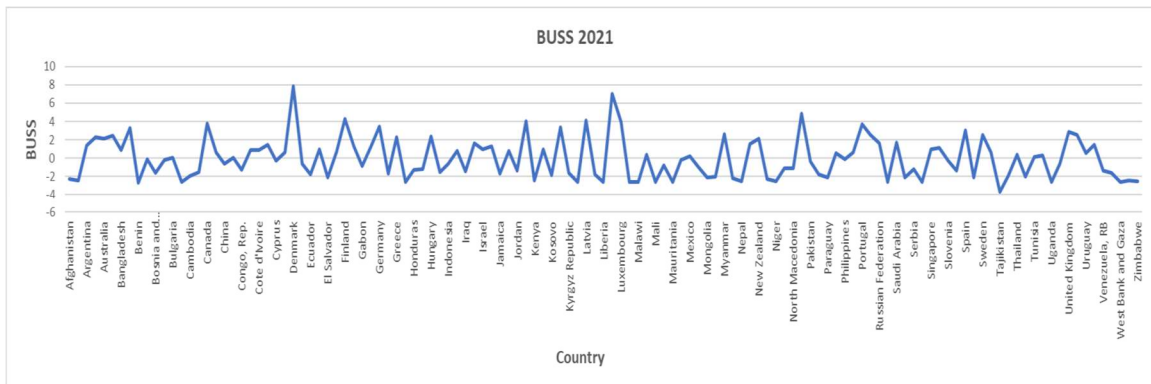*Attachment 12. Facilitating Conditions of non-Financial Sector 2021*

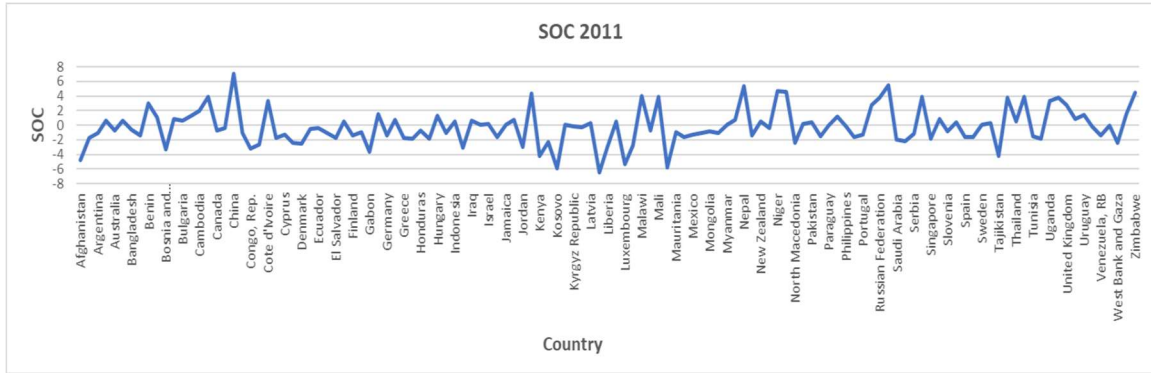*Attachment 13. Overall Valuation on Business Climate 2011*
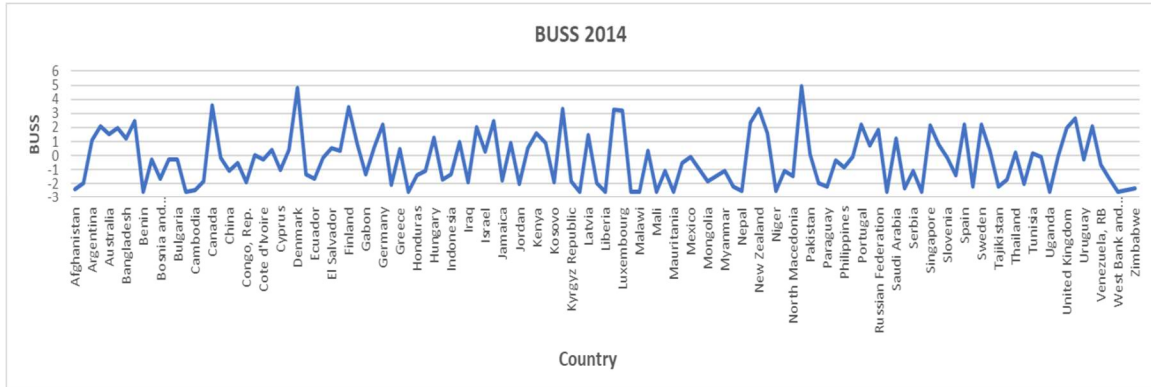
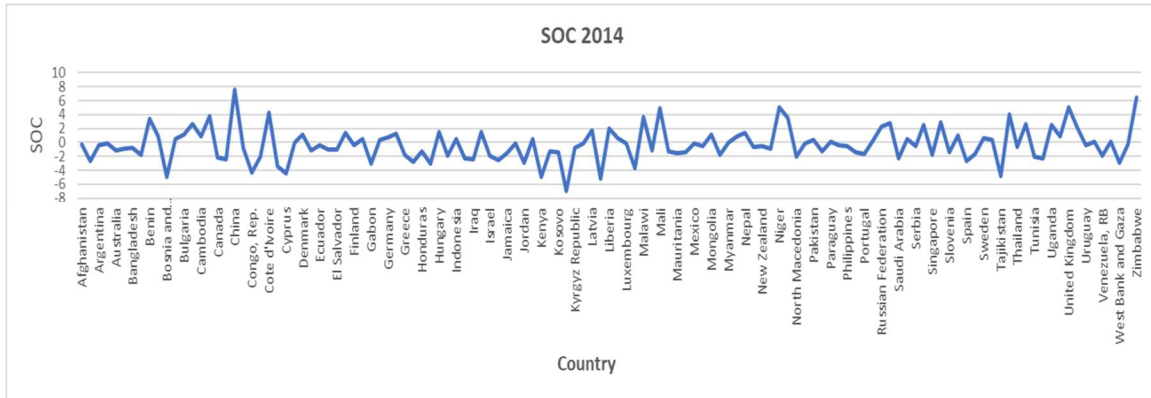*Attachment 14. Overall Valuation on Business Climate 2014*
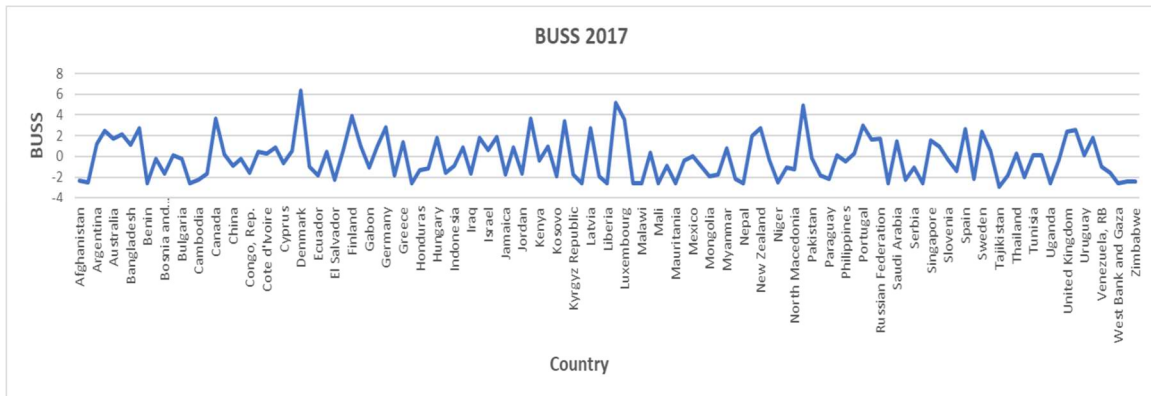
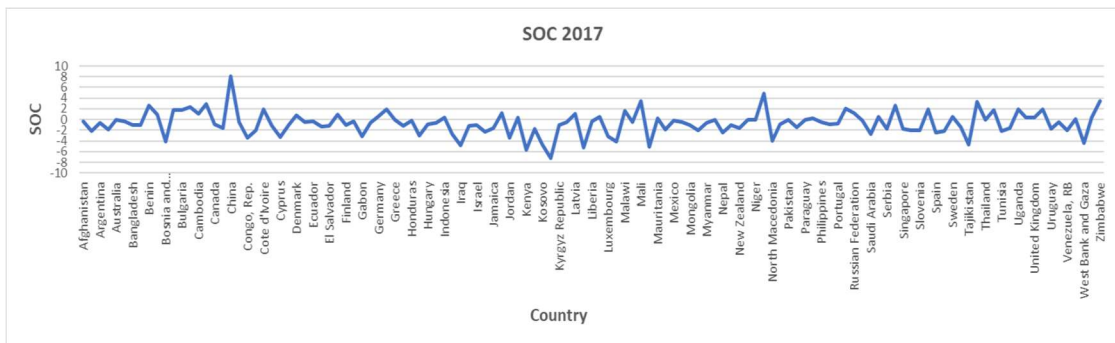*Attachment 15. Overall Valuation on Business Climate 2017*

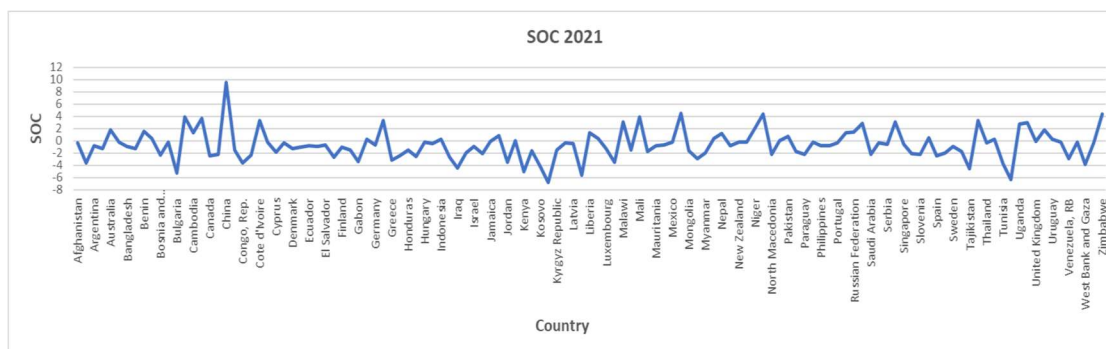*Attachment 16. Overall Valuation on Business Climate 2021*

Attachment 17. Social Conditions 2011

Attachment 18. Social Conditions 2014

Attachment 19. Social Conditions 2017

Attachment 20. Social Conditions 2021

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