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The Nexus between FinTech Adoption and Financial Development in Malaysia: An Overview

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Abstract
Financial technology or FinTech is a new technology that automates delivery of financial services. Malaysia's evolving digital economy is providing a strong foundation for FinTech to grow. The rapid technological advancement and the increasing pace of digitalization are the contributory factors to the rising adoption of FinTech among industry players. This study serves as a snapshot of past studies which provides an overall view of the state of FinTech landscape in relation to financial development.
Purpose: The main purpose of this study is to address the lack of empirical contribution of FinTech adoption in relation to financial development. It further explains relevant theories and concepts to determine the types of variables in approaching the analysis from a FinTech adoption and financial development standpoint.
Main Findings: This primarily conceptual research work where a qualitative overview of the extant literature on FinTech adoption and financial development is provided. This study identified gaps in the literature examining the macroeconomic implications of FinTech adoption in Malaysia involving financial variables. It is deemed underexplored hence a modelling framework is proposed for future research. It recommended Real Exchange Rate and Financial Development Models as the bases for potential determinants.
Practical Implications: The findings are expected to be useful for businesses, banks and regulators to encourage the adoption of FinTech. It will assist in strategizing plans to harness FinTech in promoting financial development, broadening inclusion and resolving macroeconomic challenges in the real economy.
Originality/Value: Scholarly empirical research on this proposed framework has yet to be drawn and is conceived to be useful for the financial industry players.

Keywords: FinTech Adoption, Financial Development, Malaysia, Macroeconomy.

Introduction

FinTech essentially provides an online platform to link borrowers with lenders which effectively bypasses the traditional banks. In Malaysia, the continuous advancement of FinTech is attracting significant market attention. The FinTech industry is expected to continue to grow rapidly in a dynamic and innovative manner. FinTech in principle involves the application of computers and other related digital technologies in financial services. It is therefore having a great impact on financial entities within the industry. According to Puschman (2017), FinTech broadly manifests digitalization of the financial services industry focusing on the financial solutions that are made possible by information technology (IT). Based on what is observed, FinTech as a form of new technology is indeed making a marked difference in our daily lives, both on personal and industry levels. FinTech emerges from the marriage between the two

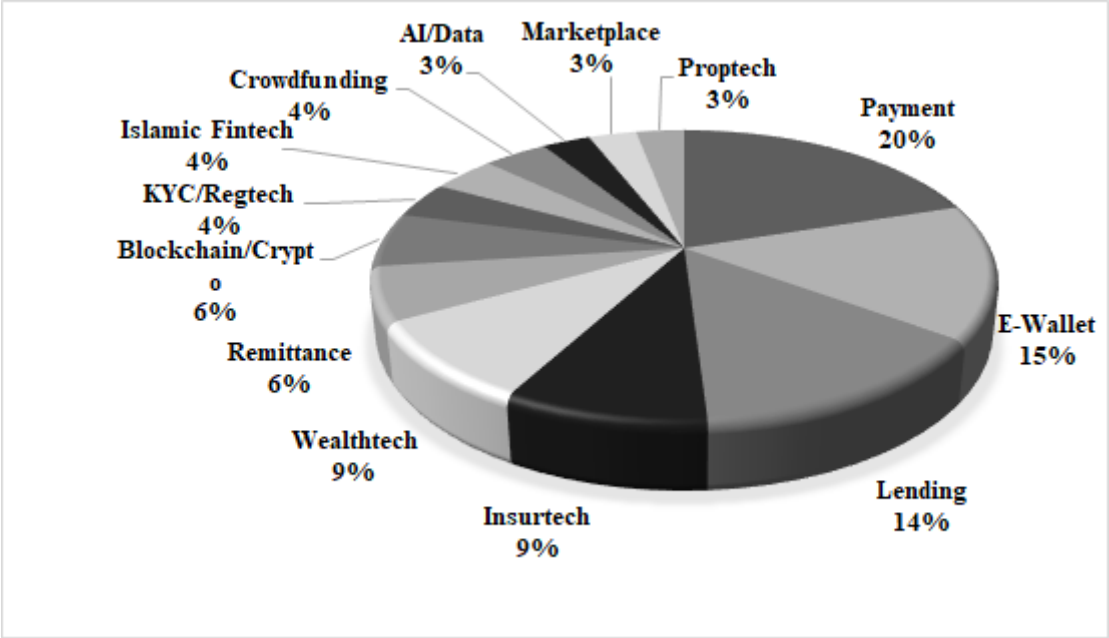
terms finance and technology (Zavolokina *et al.,* 2017). The evolution of various terms to represent financial technology has continued to be witnessed ranging from AdTech to InsurTech, from PropTech to WealthTech, and from RegTech to FinTech. In another study, Gai *et al*. (2018) have found that FinTech has become the popular term that exhibits novel technologies adopted by the financial services industry.

According to the Department of Statistics and Bank Negara Malaysia, the country's digital economy's contribution to GDP has reached 20% in 2020, increasing from 19.1% or RM289 billion in 2019. Meanwhile in the 2019 Network Readiness Index by World Economic Forum, Malaysia was ranked high among 139 other countries being surveyed (surpassing Italy, China and Chile) and ranked first among the emerging and developing Asian economies. It is gaining a foothold after nearly a decade of growth where competitive advantages are being created for the financial services companies in the FinTech sector. The increasingly digitized economy is providing the support to the start-ups and FinTech companies in Malaysia which eventually attracts investors given the correct support from the government and regulators. The rapid development of FinTech has altered the business landscape in banking to one that is continuously hungry for more innovative financial solutions. As a consequence, banks have been left with no other choice but to remain active in both competing with non-financial institutions and complementing each other beyond the provision of traditional financial services. The flourishing FinTech industry in Malaysia is providing an avenue for the financial inclusion to be broadened. Based of Figure 1, the FinTech sector in Malaysia in 2020 was reported to be dominated by digital payments and e-wallets.

More importantly, FinTech adoption that measures the ability to quickly adopt external innovation has become a growing concern as it grows to be an integral part of the financial ecosystem. Based on the 2019 Global FinTech Adoption Index by Ernst & Young Global Limited, the FinTech Adoption Index (FAI) for global consumers is recording a steady upward trend. When FAI was first introduced in 2015 it increased from 16% to 33% in 2017. The FAI has then continued to rise exponentially to 64% in 2019. This study is also taking notice of the prolonged COVID-19 global pandemic situation as declared by the World Health Organization (WHO) on 11th March 2020. This pandemic had depreciated almost all macroeconomic variables and financial variables such as the stock market returns, foreign exchange rates, crude oil and natural gas prices, and many more. However, the COVID-19 pandemic has not surprisingly accelerated both the growth of the digital economy and the digital adoption itself. Particularly in the Malaysian case scenario, the COVID-19 pandemic accelerates FinTech adoption especially in digital transactions. Some opine that the FinTech scene in Malaysia to a certain extent is already approaching its inflection point of growth (FinTech Malaysia News, 2021). This bodes well for Malaysia to be a regional leader in the digital economy by the year 2030. Figure 2 shows mobile banking transactions soared from RM200 billion in 2019 to RM460 billion in 2020. The Movement Control Order (MCO) is a catalyst that may have stimulated Malaysians' mentality for aggressive digital banking needs.

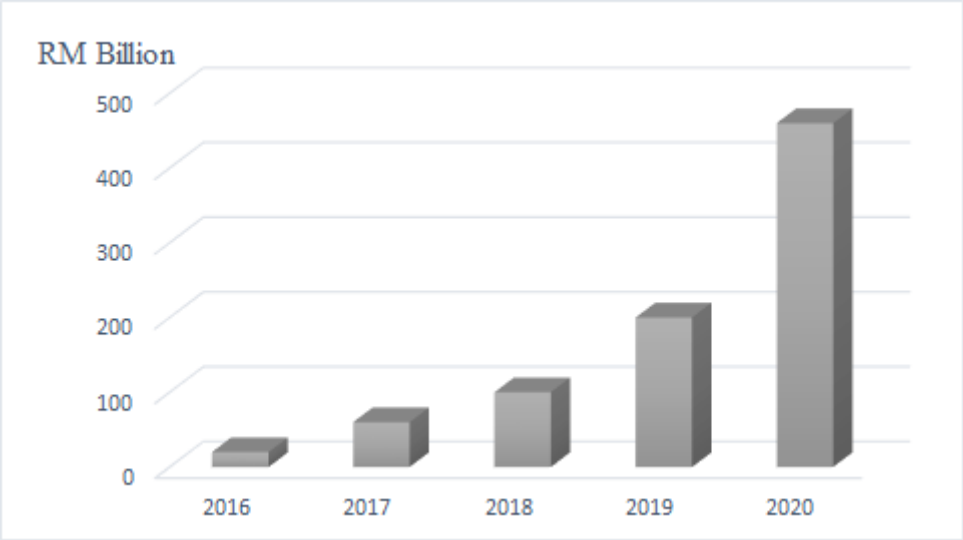
The continuous advancement of financial technology has attracted great attention from the Malaysian market. Notwithstanding the claims that it poses risks and threatens the existence of traditional banking, it could also be a boon providing opportunities when they complement each other. Bank Negara Malaysia (BNM) has recently reported that banks may face a threat in its revenue by 2025 following the FinTech advancement since it is excluded from the traditional banking institutions. In other words, FinTech is perceived to informally interfere with the incumbent banks' businesses. The fastest growing FinTech sector consequently offers a new opportunity to investigate its impact towards Malaysia's financial development which is empirically underexplored. Past studies discussed the development of FinTech adoption in general and to the best of our knowledge, none investigates the relationship between FinTech

adoption and financial development, particularly for the Malaysian case.



(Source: FinTech Malaysia News, 2021)

Figure 1: Percentage of Malaysian companies involved in FinTech



(Source: FinTech Malaysia News, 2021)

Figure 2: Mobile Banking Transaction Value

This paper thus begins with providing a qualitative overview from the extant literature on FinTech adoption and financial development. It continues with outlining the framework for empirical investigation and identifying the available dataset that can potentially be used as proxies to examine the relationship between FinTech adoption and financial development in Malaysia. Understanding the linkages between FinTech adoption and financial development in Malaysia is an important area following the growing application on digital platforms

specifically within the financial services industry. Specifically, the two main objectives of this study are as follows:

1) To systematically review past research works in relation to FinTech adoption and financial development; and
2) To explain relevant theories and concepts in determining the types of variables that are potentially required to measure FinTech adoption level and financial development.

Literature Review

FinTech and Financial Development

This study is a conceptual research paper presented by combining previous research and related literature to explain the relationship between FinTech adoption and financial development. This part of the study will focus its energy on the significant trends in the literature related to FinTech adoption and financial development. Output obtained from this section is expected to provide some guidelines in identifying relevant gaps that could potentially be filled in future research.-Based on the previous studies, FinTech can be referred to as the utilization of internet-based computerized advances in the financial services industry which brings out the new applications, plans of action, cycles and output in the financial market. The application on FinTech gives an advancement model in the financial industry (Dorfleitner *et al.*, 2017). It is expected to continuously expand through various financing channels which may result in an increased efficiency in managing the industry's operational cost. Despite the fact that FinTech began in the major monetary business sectors like New York, London, Hong Kong and Singapore (Buckley and Webster, 2016), these industries have recently seen high reception development rates globally.

FinTech is a progress innovation that resulted from its main problem factor that relates to an issue of inefficiency of the current traditional practices. Common financial players such as banks, financial speculators and securities exchanges strengthen their productivity through cautious screening and the effective conveyance of profits (Bollaert *et al.*, 2021). Their screening and checking advantage resulted in ability to collect and handle the information (Diamond 1984, Boot and Thakor 2000, and Berger *et al.*, 2006), and the ability of the data reaction in the occurrence of issues (La Porta *et al.*, 2006). The innovation on FinTech approach in the market has brought so-called information technologies and exposing a wide new opportunity. Among the primary contributions are the data advances and creative strategies to the market by opening additional opportunities to attract potential investors who were not in the market beforehand. In addition, this innovation has a high tendency to influence the market players to make changes towards the effective methods for intermediation. However, with a stable and high expense of monetary intermediation, the new advances created by FinTech would be beneficial if it can carry significant mechanical changes to the real disruptive innovation (Philippon, 2016).

FinTech as an innovation tool in accessing funding has been analysed as a solution for the firms and entrepreneurs to acquire capital. More recently, funding sources such as crowdfunding, peer-to-peer (P2P) lending and initial coin offering (ICOs) are the most common and popular FinTech solutions. The adoption of FinTech in western countries through their P2P lending has started since 2005 with Zopa and until now it has had rapid development. Statistics highlighted by Dietrich et al. (2019) have shown a tremendous increase with an uptrend reaching USD44 billion in loans and is expected to expand globally worth approximately USD900 billion in 2024. Meanwhile, several studies have reviewed the FinTech interaction with the current traditional banking practices concerning issues such as functions of financial intermediation, platform stability, payment system and the blockchain technology issue, as highlighted by Thakor (2020).

FinTech Adoption and Financial Development

The digitization and technology pursuit in financial activities can be in a variety of ways. FinTech in most of the developing economies and emerging markets is growing in tandem with the advanced economies. However, the pace of FinTech adoption varies significantly. The term adoption under this review will be explained in references to the utilization of its innovation usage, output or process. Meanwhile, financial development in this paper will be reviewed from a technology's significance perspective. Generally, FinTech is a niche activity that is vital in our financial system. In the more advanced economies, FinTech is developing on a significant scale, financially. While FinTech is a specialty action bound to certain business lines in some economies, in others it is moving into the standard of monetary administrations. This development of FinTech is astounding, as it doesn't reflect either monetary turn of events or political limits. It is also worth noting that research works pertaining to FinTech adoption commonly utilizes primary and qualitative data as a reference to the adoption objectives.

The adoption of digitization in easing microfinance institutions has been highlighted recently by Banna *et al*. (2021). FinTech innovation towards the inclusion initiatives within microfinance organization in Africa is expected to enhance the strength of the process and system to the extent that it can minimize the uncertainty in FinTech taking behaviour. Despite all the expectations on FinTech, this research has found that there exists little empirical evidence that could relate the impact of FinTech financial inclusion towards the FinTech adoption behaviour. In response to this issue, he attempts to identify relevant variables in developing FinTech-Financial Inclusion (FinFI) index to reduce the risk of poverty and firms' operation specifically in less developed countries. The research conducted a method of Fixed Effect (FE) and Random Effect (RE). In addition, a series of robust two-step Least Square Instrumental Variables (LS-IV) also has been applied in the paper. An empirical study by Fung *et al.* (2020) that highlighted the issue on financial stability has raised concerns on the impact of factors such as contagion, procyclicality and its trends to the FinTech market. It employed panel data that covers 84 countries and the result showed a heterogeneity between FinTech and the financial institutions fragility in the market. This research has also found that profitability proves to be the factor that affects the financial institution fragility towards the FinTech application.

Junger and Mietzner (2020) who studied households' preferences towards innovation in banking services have found that qualitative factors such as trust, convenience, financial literacy and transparency will affect customers' likelihood to adopt FinTech services. This study contributed significantly to the literature because the successful FinTech adoption came from individual customers who felt it was convenient to switch from conventional to the digital services. FinTech adoption in payments has grown rapidly in the Western countries. In addition to that, Agarwal and Chua (2020) focused on the other dimension of household finance. They investigated FinTech adoption in various services namely digital payment, mobile money, lending, robo-advising and crowdfunding. Their research findings suggested that FinTech is significantly beneficial to household finance in terms of its consumption and borrowing. This enhances the findings on FinTech adoption in financial services development specifically from the payment perspective.

Another study based on multi-method evaluation in determining the FinTech adoption method by Singh *et al.* (2020) has suggested a framework from the acceptance perspective. This research has included sub-constructs of Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT) and classified the factors into adoption, behavior and technology. This study then proceeded with the relationship between these three factors. Findings have shown that the key determinant for FinTech adoption is driven by the discernment of FinTech services' usefulness and public influence. Moreover,

actual use has significant influence on adoption by the convenience factors and public influence but does not reflect the respondents' intention and perceived usefulness. FinTech enables users to adapt with the rapid advancement in financial framework and institutions. This is directly related to the convenience factors in combination of technology advancement and basic application that are commonly used by the customers in banking businesses (He *et al.*, 2017).

The emergence of FinTech provides a solution for credit constraint issues as explained by Casanova *et al.* (2018). This paper conceded that financial innovation will enhance efficiency and offer cost savings. It is expected to develop new processes of financial intermediation to fill the credit gap. They have found that the key drivers for finance and growth originated from contributions from entrepreneurial activities and innovation. In another study, a long-run cointegration relationship has been found between financial development and a series of independent variables including technology in Brazil, Russia, India, China and South Africa (Raghutla and Chittedi, 2020). Financial development in emerging economies needs to be enhanced as it has a significant impact on the economic output which will initiate improvements in financial development policies. These findings can be associated with FinTech adoption as a potential tool in contributing to a trade-friendly environment, as an incentive to directly participate in the financial market.

Another evidence on the dynamic cointegration between the development in technology and financial development has been studied by Giri *et al.* (2021). A nonlinear method called Nonlinear Autoregressive Distributed Lag (NARDL) method was used to examine the variables between technological and financial development in India. Meanwhile, a similar study conducted in India investigated the impact of financial development on local investment such as savings. Sinha and Shatri (2021) applied an autoregressive distributed lag (ARDL) method on its variables and found a significant positive relationship for both short-run and long-run. This study highlights that an improvement in technology is pivotal to enhance local investment in the form of domestic household savings. This will eventually contribute positively to the financial development framework of the country through the improvements of domestic savings.

Chen and Sergi (2018) reviewed the important elements contributing to Russia's economic development through the financial revolution in the past ten years. With digital financing and mobile banking as the starting point, it has expanded to a variety of other financial services such as trading, insurance and investment. Aggressive innovation has led Russia to be at the forefront in its development of digital advancement in payment, loan, credit and investment. It has also been found that the key drivers including participants, growth in population and competitive cost saving would be beneficial for the emerging market economies. In a similar vein, evidence from the European Union (EU) countries' samples have found that the financial advancement and investment in the IT industry has a significant positive impact towards the gross domestic product (GDP) of the economies under study (Zagorchev et al., 2011).

This section reviewed the empirical studies on FinTech adoption with the current literature. Overall, research in adopting FinTech gives a significant impact in financial institutions, microfinance, investment and household benefits. In addition, the contribution of FinTech to financial development can be seen in terms of operations through savings and cost efficiency.

FinTech in Malaysia

FinTech adoption is gaining a foothold in Malaysia parallel with the fourth industrial revolution. This campaign encourages financial institutions to adopt a new business framework in adapting themselves to the changes in technologies towards a new industry consisting various financial intermediaries. Tun-Pin *et al.* (2019) examine the Malaysian adoption in FinTech services by analysing the potential drivers adopting FinTech in the country. The

models of TAM and UTAUT were used to determine perceived variables such as usefulness, ease of use, public influence, security and individual innovativeness with the intention of FinTech usage. In addition, this research also included demographic factors to examine the diverse adoption through genders and age of FinTech preferences. The study showed significant positive dynamics between user-interface, friendliness, instructions clarity of the used platforms, FinTech features with FinTech preferences and adoption. In addition to that, an interesting finding highlighted that the male respondents were more inclined to explore and adopt FinTech applications as compared to the female respondents.

A study on a specific payment FinTech application from the Malaysian perspective by Alwi *et al.* (2019) highlighted the idea of FinTech adoption in payment services. The main drivers of FinTech adoption were cost reduction and increased efficiency where specific payment types were used as a sample to analyse the level of adoption. The results showed a significant relationship between the variables and the payment application through FinTech adoption. This analysis also suggested that younger users are more likely to be involved in adoption of technology with a score of 52.7% of the total respondents. Most of the past literature agreed that FinTech is expanding and experiencing a steep growth in Malaysia. A study that relates *zakat* distribution with FinTech application was highlighted by Yahaya and Ahmad (2019). The innovation of FinTech has no limit to be applied in Islamic perspective as long as the objectives are clear. The tradition of *zakat* distribution has a number of issues with regards to the inefficiency of its distributions to the rightful recipients known as *asnaf*. The researchers studied the potential opportunity to introduce FinTech adoption in order to improve the *zakat* distribution effectiveness. The implementation of services such as mobile banking for *zakat* collection is seen to be a potential solution for the issues faced by the institution. Employing the UTAUT model, the findings provided a positive significance result on the acceptance of FinTech by factors such as performance expectancy, social influence and facilitating conditions but insignificant by the effort expectancy.

Model Framework in FinTech

While the earlier sections combined previous research works and relevant sets of literature to provide a qualitative overview of the extant literature in the area of FinTech adoption and financial development, this section will continue the discussion with the research model. In a separate exercise, this study will outline the empirical models to be used for hypothesis testing and for stimulating the empirical framework based on appropriate theories. The starting point is to build upon existing theoretical work related to the Real Exchange Rate Model and Financial Development Model to identify the key determinants of exchange rates and financial development. The identified variables will then be augmented with a FinTech variable, which acts as an exogenous shock. Using the robust ordinary least squares estimation method, the following real exchange rate (RER) and financial development (FD) models can be estimated.

$$RERt = \delta 0 + \beta FinTecht + \pi Xt + \varepsilon t \quad (1)$$

$$FDt = \delta 0 + \beta FinTecht + \pi Xt + \varepsilon t \quad (2)$$

Both models, namely the RER model (Equation 1) and FD model (Equation 2) are individually augmented with the FinTech variable. Note that FinTech is representing the volume of FinTech firms. It is measured as either a count of new FinTech established each year (FinTech_EST) or cumulative of all firms each year (FinTech_CUM). Adapting selected variables from Narayan's (2018) research work and index from Svirydzenka (2016), Table 1 provides the detailed definition of the variables and sources of data. These variables will be used to investigate the financial development implications of FinTech companies along with some

control variables as proxies for macroeconomic indicators.

Table 1: Variables Description

Variables	Definition	Units	Sources
FinTech_EST	FinTech start-ups established each yea		FinTechnews.sg
FinTech_CUM	Total number of FinTech start-ups each year		FinTechnews.sg
FDI	Financial Development Index		data.imf.org
RER	Real exchange rate quoted as the USD over Malaysian Ringgit (MYR)	USD/MYR	Bank Negara Malaysia
INF	Inflation rate	Percentage	statista.com
IPI	Import Price Index	Indices	statista.com
UMR	Unemployment rate	Percentage	statista.com
COP	Crude Oil Price	USD/barrel	macrotrends.net

Sources: BNM, IMF, Narayan (2018) and Svirydzenka (2016).

It is a common encounter in the literature for studies to estimate the impact of financial development on the growth of an economy, inequality as well as the country's economic stability. Typically, financial development is measured by utilizing the degree of financial depth of an economy as the key reference. Previous research works tend to employ either of these two scales of financial depth, namely the ratio of private credit to GDP or the ratio of stock market capitalization to GDP. However, these are found to be dismissing the complex multidimensional nature of financial development. Therefore, this study proposes future researchers to apply datasets from Svirydzenka (2016) to measure financial development (FD). The broad-based FD index developed in the International Monetary Fund (IMF) working paper is unique as it covers an aggregate of nine indices that represent the financial institutions and financial markets with regard to their depth, access and efficiency. This aggregated overall FD index could potentially offer a useful analytical tool for future researchers and policy makers.

Conclusion

This study contributes to the literature by conducting a conceptual research exercise which analyses the pattern of recent development related to FinTech adoption and financial development in Malaysia. While the empirical contribution of FinTech adoption on financial development is still underexplored, a framework modelling is proposed for future research. The conceptualized applications for the industry are aimed at reducing the gap between academia and industry. With the integrated analysis applied in the research, the FinTech industry practitioners such as the banks, businesses and investors can benefit by way of internalizing FinTech adoption and its effects towards Malaysia's financial development. Meanwhile, from the regulators' perspective, macroeconomic challenges arising from FinTech adoption and financial development could potentially be addressed alongside broadening financial inclusion. Additionally, by combining past research and real data analysis, FinTech service providers can now better understand the users' needs, wants and desires. This is specifically by way of personalizing demand for financial services according to the user's preferences. FinTech has the potential to transform the business nature with technologies and trends. This includes building a better relationship between merchants and customers, and its reaction towards the macroeconomic variables and financial development.

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