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Is Islamic Banking in Malaysia Lagging Behind in Fintech?

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Abstract:

Fintech — Financial Technology — refers to technology enabled financial solutions. Finance and Technology have been working hand in hand as a package in the banking industry across three distinctive eras. In line with the growth of Islamic finance worldwide, Fintech has unlocked substantial opportunity in this Shariah-compliant industry and resulting in the emergence of 'Islamic Fintech.' Over the years, the Islamic financial landscape has been transformed, driven primarily by leading innovations in the space of e-finance, mobile technologies, social media and artificial intelligence.

This Paper aims to study public perceptions regarding:

The progress of Islamic Banking in Malaysia in the digital transformation, using (1) customer experience, (2) product innovation and (3) technology – process agility as the key parameters

The challenges faced by IFIs in maneuvering this change

The contributions of various stakeholders in promoting Islamic Fintech

The Study also recommends areas for improvement primarily for consideration by the IFIs as well as policy setters.

This qualitative research explores the applicable literature in relation to Fintech with survey questionnaire being distributed to gather feedback in meeting the objectives of the Paper. Interview session has also been carried out as supplementary findings for the research.

The research findings indicate that IFIs in Malaysia are mostly in the development phase, striving to play catch-up in the Fintech field; with the critical success factors include (1) customer-centric product innovation, (2) agile business model and (3) robust infrastructure, highly resilient to data privacy and cyber security threats.

Besides, members of the public highlight that the greatest challenge to progress smoothly is lack of talent, primarily attributed to lack of public awareness and interest. The risk-averse culture of IFIs coupled with cyber security and data privacy are also regarded as the main obstacles for the industry.

From the survey, the public is of the opinion that government, IFIs, educational institutions and mass media are currently performing below the satisfactory level in promoting Islamic Fintech.

The future of Fintech promises much, but also requires much from all the stakeholders in the industry. More collaborations are needed to achieve the end goals — a superior risk-return profile with operational efficiency, maintaining customer data security while enhancing the customer experience with minimal disruption to customers.

Keywords: *Fintech, Islamic Banking, Islamic Finance, Malaysia*

1. Introduction

Basel Committee on Banking Supervision (2018) defines Fintech as 'technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.'

The key difference between Fintech and traditional financial institutions is the use of advanced, innovative and digital technologies. The traditional financial institutions have large built-in IT infrastructures while Fintech companies create products using advanced technologies such as mobile phones, big data analytics and machine learning. Through these technologies, Fintech companies are providing cheap and easy-to-access services while operating largely outside of the banking regulations.

For many years, the Islamic financial industry has been seen as lagging¹ behind in digital innovation relative to its conventional counterparts with lack of Shariah-compliant alternatives to meet the growing demand for wealth management, investment and banking products (Irfan and Ahmed 2019).

Fintech is likely to reshape significantly Islamic Financial Institutions (IFIs) in Malaysia. According to Bank Negara Malaysia (BNM) website, there are 16 Islamic banks in Malaysia at present with 11 of them are locally owned. As a recap, BNM starting from 2005 has allowed conventional banks to open Islamic windows as their Islamic subsidiaries,

¹Cambridge Dictionary (1995) defines lagging as 'to move or make progress so slowly that you are behind other people or things.'

licensed under the Islamic Banking Act (IBA) 1983. Since then, almost all local banks have set up their own Islamic subsidiaries.

Banks in Malaysia have been competing with Fintech companies given the Malaysian market has a strong pull factor for digital banking supported by digitally savvy customer base and high mobile penetration (Goh and Paul Raj 2019). Not only that, Fintech poses a serious threat and has the potential to replace traditional banking functions such as PayPal and Alipay e-payment applications, mobile banking, Robo-Advisory, Crowd funding and Peer-to-Peer (P2P) Financing. So, is Islamic Banking in Malaysia really lagging behind in Fintech?

1.1. Objectives

The main objective of the research is to study public perceptions regarding:

- The progress of Islamic Banking in Malaysia in the digital transformation, using (1) customer experience, (2) product innovation and (3) technology – process agility as the key parameters
 - The challenges faced by IFIs in maneuvering this change
 - The contributions of various stakeholders in promoting Islamic Fintech
- From the above findings, this Paper also recommends areas for improvement primarily for consideration by the IFIs as well as policy setters.

1.2. Research Contributions

As Fintech itself is in the growth mode, studies in Islamic Fintech are rather limited at this time. According to Dr Mohamed Damak, Global Head of Islamic Finance at Standard & Poor's, 'it is very difficult to compare the development of Islamic and Conventional Fintech at this stage' (Fintech Summit 2018). The views extracted from the previous literature are predominantly from the industry experts while public insight regarding the achievement of Islamic Fintech is a question mark still.

This research aims to study public perceptions regarding the status of IFIs in Fintech field and at the same time identifying the challenges and areas for improvement.

In shaa Allah, this research shall add to the literature of Islamic finance, particularly in the area of Islamic Fintech, reducing the gaps between the theory and the practice as well as bridging the expectations between industry practitioners and the public, at large.

2. Literature Review

2.1. Fintech Evolution

The 'Fintech' term was introduced by Bettinger in 1972 in his article 'FINTECH: A series of 40 Time Shared Models Used at Manufacturers Hanover Trust Company.' The popularity of Fintech began in the early 1990s — it was initially used as a reference to the 'Financial Services Technology Consortium' — a project started by Citigroup to assist technological corporation efforts (Mohamed and Ali 2019).

Now, we are in the digital revolution, which is the fourth stage of the Industrial Revolution (IR) as depicted in the timeline below. The first IR, from the 1780s until the end of the 18th century, used steam power and water to mechanize and increase production. The second IR, from the 1870s until the beginning of the 20th century, concentrated on electric power followed by the third IR, from 1960 – 1970 which focused on advanced electronic and information technology to enhance efficiency.

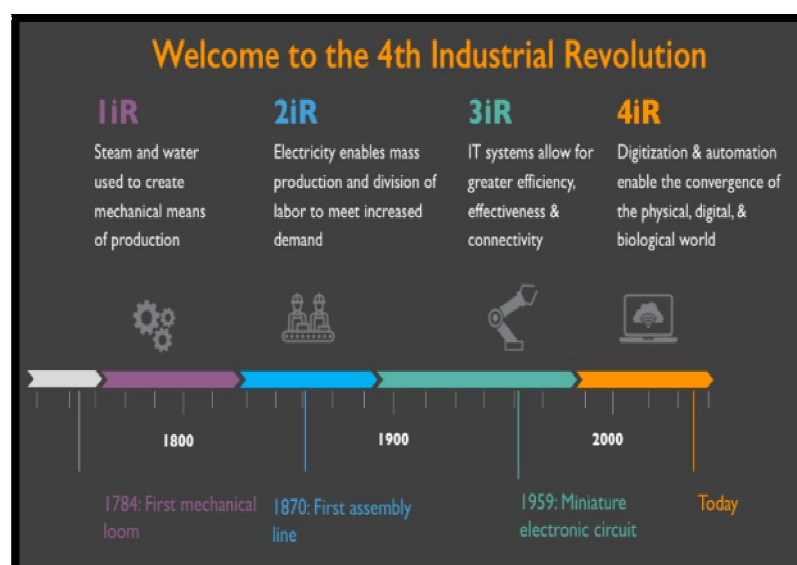


Figure 1

Source: Groscurth 2017

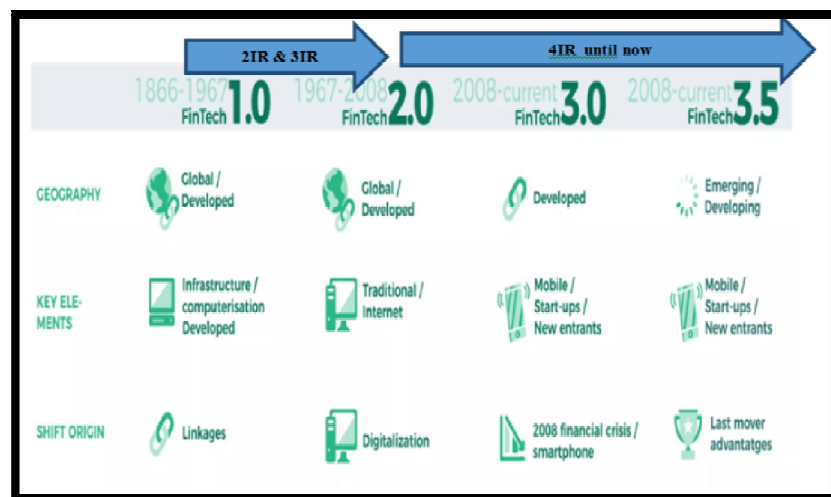


Figure 2
Source: Arner, Barberis and Buckley 2016

2.1.1. Fintech 1.0 (1866-1967) Key Element: Infrastructure

This was an era when financial globalization was initiated. It started with technologies such as the telegraph that allowed for the first-time rapid transmission of financial information across borders. The key events include the introduction of the first transatlantic cable in the Year 1866 and Fedwire in the Year 1918, the first electronic fund transfer system, which relied on the telegraph and Morse code (Zigurat 2019). Credit cards were also launched in 1950 starting with Diner’s Club followed by American Express in 1958 (Mohamed and Ali 2019).

2.1.2. Fintech 2.0 (1967-2008) Key Elements: Bank - Internet

This period marked the shift from analogue to digital, led by traditional financial institutions. The first ATM installed by Barclays bank indicated the beginning of the modern period of Fintech in 1967 (Arner, Barberis and Buckley 2016).

In the early 1970s, NASDAQ—the world’s 1st digital stock exchange was established and in 1973, SWIFT (Society for Worldwide Interbank Financial Telecommunications) was set up and to this day the most commonly used communication protocol between financial institutions facilitating the large volume of cross border payments.

The world was then introduced to online banking, which boomed in the 1990s on the back of the Internet and e-commerce business models. PayPal was set-up in 1998, transforming the way people managed fund payments. By the beginning of the 21st century, banks’ internal processes, interactions with outsiders and retail customers had become fully digitised. This era ended with the Global Financial Crisis in 2008 (Zigurat 2019).

2.1.3. Fintech 3.0 (2008-Current) Key Elements: Start-Ups, Developed Markets

Fintech 3.0 was born after the financial crisis due to the erosion of trust. This, coupled with the fact that many financial professionals were out of work, led to a shift in mindset and paved a way for a new industry, Fintech 3.0.

The first-version crypto currency bitcoin was initiated in 2009 followed by the sudden surge of different cryptocurrencies, which in turn, led to the great crypto crash in 2018 (Mohamed and Ali 2019).

The smartphone had also become the primary device by which people access the internet and use for different financial services. 2011 saw the introduction of Google Wallet and then Apple Pay in 2014.

The main divergence between Fintech 2.0 and Fintech 3.0 was the entities that used technology to deliver financial products / services were new start-ups, no longer traditional financial institutions (Nicoletti 2017).

Rank	FinTech 2.0		FinTech 3.0
	Banks by market cap (2015)	IT Companies by revenue (2014)	Start-ups by valuation (2015)
1 st	Wells Fargo & Co (US)	FIS (US)	LuFax (CN)
2 nd	ICBC (CN)	Tata (IN)	Square (US)
3 rd	JP Morgan (US)	Fiserv (US)	Markit (US)

Table 1
Source: Arner, Barberis and Buckley 2016
CN: China, IN: India

2.1.4. Fintech 3.5 (2008-Current) Key Elements: Start-Ups, Developing / Emerging Markets

Fintech 3.0 emerged in developed markets as a reaction to the financial crisis driven by public expectations. In Asia and Africa, however, the latest Fintech developments had been primarily pushed to achieve economic development. The era in these two regions was named as Fintech 3.5. According to EY Fintech Adoption Index Year 2017, the countries with the highest Fintech usage were China (69%), India (52%) and then only followed by the UK (42%).

2.2. Fintech – Global Landscape

According to Citi’s Digital Disruption report, funding for Fintech grew tenfold from US\$1.8 billion in 2010 to US\$19 billion in 2015 — primarily from venture capital funds. It is estimated that over 70% of the Fintech investments to date have been in the payment subsector of financial services and the business-to-consumer personal / small and medium enterprise (SME) business segments (Chua, 2016).

The industry has grown rapidly over the years, caused by the drastic change in consumer behaviour particularly after the smartphone revolution. Consumers now expect convenience and seamless user experience in transactions.



Figure 3

Source: EY Fintech Adoption Index Year 2017

The Islamic Fintech Report states that in 2018, there were more than 12,000 FinTech startups worldwide, including that of 93 Islamic Fintech. Waupsh (2016) classifies Fintech products into 3 categories, namely white-label, direct and gold label.

White Label	Direct Label	Gold Label
A product that is delivered to the end-user of the financial institution, via the financial institution, itself The product is not developed by the financial institution, but is purchased from a Fintech vendor, the developer.	A product that is directly delivered from Fintech platforms to consumers and businesses	A product that has features of both white and direct labels Branded solutions designed for financial institutions to help them compete like white label products and at the same time reduce user problems.

Table 2

Mohamed and Ali (2019) view the global landscape of the Fintech industry in two key perspectives - (1) the financial services industry perspective, and (2) digitalisation / technological perspective.

2.2.1. Financial Innovations within the Financial Services Industry Perspective

These innovations have resulted in disintermediation with open access to financial services.

	Description	Contribution
Mobility	Ability to access information / applications via portable networked computing devices such as smartphones. E.g. Online Banking, E-Commerce and E-Wallet	The user may perform transaction / access information 'on the go' without the need to be in a fixed location.
Peer to Peer (P2P) Financing	A technology-based service that connects business directly with investors, via a web-based platform for a fee	Expand access to financing, in particular for SMEs, and make verification /credit checking easier for investors. Investors earn returns rather fast.
Crowdfunding	An internet-based platform that connects fundraisers to funders to finance a particular campaign / program / project with a set target and within a certain timeframe	Generating funds / capital investments from individuals / organizations for projects Investors hold the investments for the long term.

Table 3

2.2.2. Financial Innovations Within The Digitalisation / Technological Perspective

	Description	Contribution
Enhanced Automation		
Artificial Intelligence	A process that applies algorithm to analyse data and subsequently generates insights and make predictions E.g. Robo-Advisors and Machine Learning	Automate labour-intensive tasks and help improving customer experience. It enables computer to execute 'smart' tasks.
Big Data Analytics	Analytical tools to process large data sets from multiple different sources to drive business decisions.	Significantly reduce time and error from manual working producing a detailed analysis for decision making.
Greater Decentralization		
Blockchain	It tracks and records data using a distributed digital ledger system - verifying and storing data across hundreds or thousands of computers globally.	Removes the need, and associated cost, of keeping transactions/ contracts in a central repository database
Cloud Adoption	It stores resources on the internet (in a 'cloud') and retrieves data using web-based tools and applications instead of on a direct server connection.	It significantly reduces banks' capital expenditure on expensive internal servers.

Table 4

Source: Hill 2018

2.3. Fintech in Malaysia

Ex-Prime Minister of Malaysia, Tun Dr Mahathir Mohamad said in the 15th Kuala Lumpur Islamic Finance Forum 2019, 'the application of smart technology within the financial industry — financial technology (Fintech) — has positively disrupted the industry, as well as other industries such as mobile payments, money transfers, financing and asset management' (**Bernama 2019**). This technology breakthrough makes financial transactions more automated, user-friendly and hence, a superior customer experience.

2.3.1. An illustration: Malaysia Has Been a Hot Market for E-Wallets

Malaysian consumers nowadays are comfortable using alternatives such as GrabPay and Boost to perform payments and transfers. They are given rewards in the form of cash backs and attractive promotions.

The plus point for e-wallet issuers is the customer data. Spending patterns can be tracked and marketing strategies shall then be strategised targeting the right customer pool via data mining.

The mobile banking space is where the competition will heat up going forward. Maybank has launched its MAE e-wallet while TNG Digital is a joint venture between the CIMB-controlled Touch 'n Go Sdn Bhd and Ant Financial Services Group.

The financial transactions via mobile banking channel in 2018 increased more than double to 257.4 million, valued at RM100.1 billion (2017: 107.7 million, RM50.7 billion) - (Paul Raj 2020)

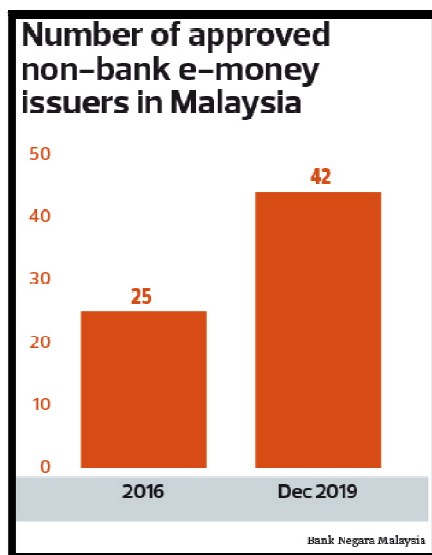


Figure 4

According to BNM, Malaysia currently has 47 e-money issuers of which 42 are non-banks. In 2016, there were just 25 non-bank players.

Malaysians are a highly banked population with 95% have at least one deposit account and have used online banking previously. Malaysia Fintech Report Year 2019 summarizes that Malaysians, in general, are digitally active population with average consumption greater than 50% for the respective digital product offerings, as depicted in the diagram below.

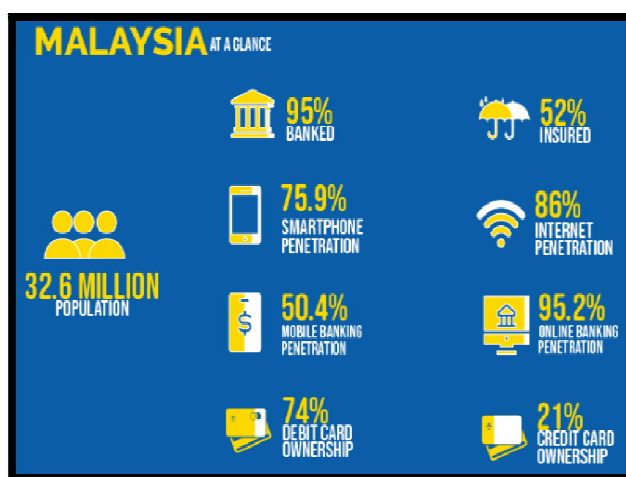


Figure 5

Source: Malaysia Fintech Report Year 2019

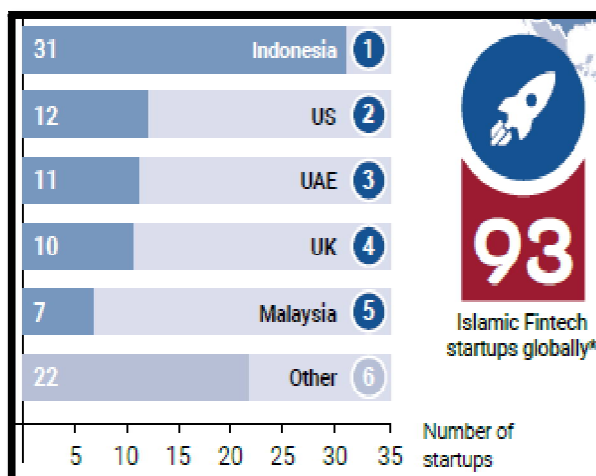


Figure 6

Source: Islamic Fintech Report Year 2018

On top of that, the global Islamic Fintech has seen healthy growth since the early 2010s. Of the 93 start-ups identified by Islamic Fintech Report Year 2018, 31 are based in Indonesia, which has the world's largest Muslim population followed by the USA. The UAE and Malaysia have the next highest number of Islamic Fintech start-ups, a reflection of the broad Islamic economy strategies that these countries have implemented.

2.4. IFIs in Malaysia – Registering Accelerated Growth in Fintech Field

Deloitte Touché Tohmatsu Ltd in its report, The Digital Islamic Services Landscape: Uncovering the Digital Islamic Services opportunity for the Middle East and the World states that Muslims represent more than 22% of the world's population — and 62% of them are residing in Asia (Subramaniam 2019). Islam is the fastest-growing religion and the number of Muslims is projected to exceed other religions in the years to come (Lipka and Hackett 2017).

One of the consequences of this rising Muslim population is the increase in demand for Shariah-compliant products. According to Islamic Fintech Report Year 2018, demand for practical digital Islamic finance solutions is projected to surge given 15 of the top 50 countries with smartphone penetration are the Organisation of Islamic Cooperation (OIC) countries.

Similarly, Thomson Reuters' Islamic Finance Development Report 2018 states that the global Islamic financial market is worth about USD2 trillion and it is projected to grow at 10% per year on average, going forward. The report also affirms that digitalisation has emerged as the major trend with Malaysia, Bahrain and the UAE continue to lead the Thomson Reuters' Global Islamic Finance Development Indicator (GIFDI) scores.

On the local front, it has been the objective of the government to develop Islamic banking parallel to the conventional system. The concept of Islamic Window has been practised in Malaysia whereby instead of establishing new Islamic banks, existing commercial banks are also allowed to offer Islamic banking products to customers (Venardos 2005).

IFSB Secretary-General Jaseem Ahmad indicates that the Islamic banking industry has reached approximately 100 million customers worldwide. However, the potential market size is six times that, and this gap can be tapped through Islamic Fintech (Shabana 2017). Fintech shall position itself as a solution in providing financial inclusiveness, particularly in Malaysia - which has steadily developed an integrated dual banking system. According to the Association of Islamic Banking and Financial Institutions Malaysia, the local Islamic banking industry is expected to have a 40% market share in Malaysia's total banking assets by 2020 (MarketLine 2019).

In Malaysia, the assimilation of digitalisation strategies in the Islamic banking business model has already taken off as illustrated in the table below:

Investment Account Platform (IAP) - akin to a P2P platform
<p>The first Shariah-compliant internet-based banking platform launched by BNM in 2016 developed by Raed Holdings Sdn Bhd, with a consortium of 6 Islamic banks, namely Affin Islamic, Bank Islam, Bank Muamalat, Maybank Islamic, Bank Rakyat and Bank Simpanan Nasional. IAP allows investors to fund either private / government-related ventures.</p> <p>The unique feature of the IAP is the intermediary roles undertaken by the Islamic banks –</p> <ol style="list-style-type: none"> (1) Assessing the eligibility and risk appetite of the individual investors, (2) Conducting due diligence on prospective ventures to ensure the risks undertaken are aligned with the investment mandates, (3) Ensuring proper governance is in place to safeguard the investors' interests and the banks' reputation. <p style="text-align: right;">(Mobius 2016)</p>
Bursa Malaysia-i
<p>The world's first fully-integrated Islamic securities exchange platform launched in 2016 that provides a comprehensive range of exchange related facilities — trading, clearing, depository services and settlement with Shariah-compliant features.</p> <p>*The Bursa Suq Al Sila is an example of a successful online platform for Commodity Murabahah transactions.</p> <p style="text-align: right;">(Personal Wealth Team 2016)</p>
Ethis Ventures— the only licensed Islamic Equity Crowdfunding operator in Malaysia
<p>This equity crowdfunding shall allow SMEs and start-ups to raise funds by issuing shares to the public via Musharakah or Mudharabah risk and reward sharing agreement (Whitehead 2019).</p>
Assidq.com — the first one-stop halal platform for Islamic finance products in Malaysia
<p>Customers may apply for personal financing and credit cards from 7 Islamic banks and a non-bank financial service provider. Its partners include Standard Chartered Saadiq, Alliance Islamic Bank and Agrobank. Assidq.com shall review the applications before forwarding the information to the Islamic banks (Noordin 2019).</p>

Bank Islam

The Bank has launched **Sadaqa House in 2018**, a charity crowdfunding platform as an initiative to expand the Bank's role in the Islamic social finance agenda for underserved sectors - healthcare, education and entrepreneurship. To ease the accessibility, contributions can be made using Bank Islam's existing channels such as Internet Banking, Transact-at-Palm Mobile Banking-i and Bank Islam credit card. Additionally, for every public donation made, Bank Islam undertakes to match the amount Ringgit for Ringgit, to a maximum of RM500, 000.

Apart from **Sadaqa House**, the Bank's Internet Banking has also been enhanced to include **income tax, Tabung Haji, DuitNow P2P & m-Commerce payment platforms**. As a result, its market share growth in 2018 continued to outpace the industry **with total users grew by 25%, while financial transaction volume increased by 133% and fee income grew by 80%.**(Bank Islam Annual Report 2018)

Bashar Al Nator, Global Head of Islamic finance at Fitch Ratings remarks, 'If you look at the actual Islamic banks, when it comes to conventional Fintech such as internet banking and mobile banking, they have done well. They are competing with conventional banks.' (Fintech Summit 2018).

2.5. IFIs in Malaysia – Lagging Behind in Fintech Field

On the contrary, others are of the view that Fintech is still at an embryonic stage for Islamic Banking industry (Reza 2019). For illustration, Islamic Fintech only represented 3% of the Fintech players in Malaysia in the Year 2019, according to the Malaysia Fintech Report.

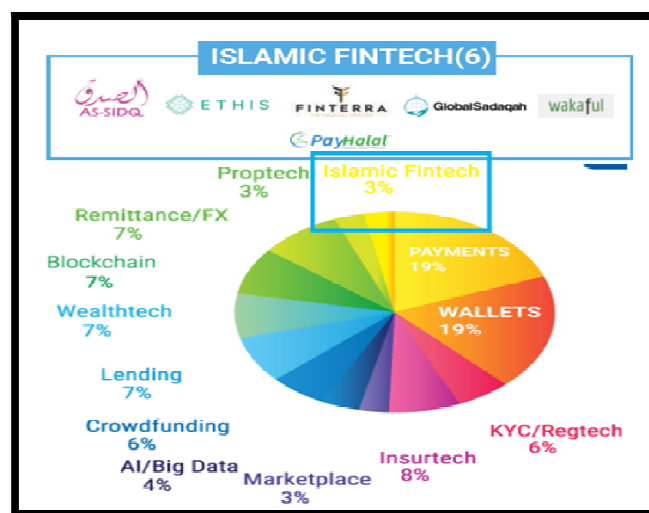


Figure 7

Source: Malaysia Fintech Report Year 2019

According to Zeeshan Uppal, co-founder of UK-based Property Crowdfunding Investment Company Yielders, conventional finance has always led the growth in the industry while Islamic finance seems slow to tag along (Noordin 2017). Besides, BNM Assistant Governor Marzunisham also shares the same view that Islamic finance Fintech is still in its infancy and growing (Willy 2017).

Today, IFIs in Malaysia are in a fight not only with other banks but also with non-banks. Fintech attackers, for instance, have up to a 400 basis points cost advantage over banks because of no physical distribution costs, plus their big data and advanced analytics will provide them guidance to understand the customer needs. McKinsey stresses that absent a detailed plan, 10% to 40% of bank revenues could be at risk by 2025 (Dietz, Khanna, Olanrewaju and Rajgopal 2015).

3. Research Methodology & Summary of Activities

The selection of accurate methodology plays an important role in the quality of research. The primary data for the project is primarily gathered via the survey questionnaire as well as the interview session.

There are 55 respondents to the survey questionnaire with the demographic profile is summarised below. The majority of the respondents are linked to innovation, technology and banking in their respective organisations and hence, ensuring the reliability of their feedback on this subject matter.

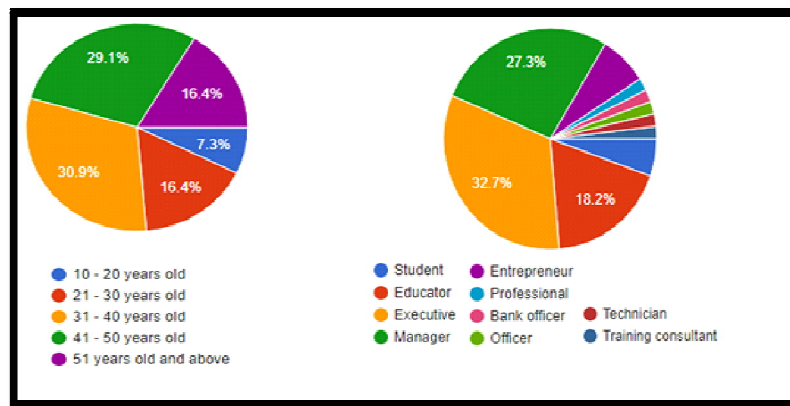


Figure 8

Additionally, an interview session has been conducted with Abdul Shakoor, a Programmer to seek his views on the progress of IFIs in Malaysia in the Fintech field. Abdul Shakoor has been selected as an interviewee given his International exposure, coupled with his background in IT; Banking and Islamic Finance fields, which match the scope of the research.

In this research, secondary data is also part of main references, which include online articles, journals, websites and conferences to get recent information regarding Islamic Fintech.

- Refer Appendix 1: Survey Questionnaire, Appendix 2: Interview Questions, Appendix 3: Interviewee Profile

4. Findings: Status To-Date

For this Study, customer experience, product innovation and technology - process agility are used as parameters to assess IFIs in their digital transformation.

4.1. Customer Experience

Technological advances have completely changed the bank-customer relationship with the delivery of banking products and services shall be more efficient—without the need for physical interaction while customers enjoy increased convenience, reliability and speed. Consumers now expect their financial experiences to be mobile, personalised, customizable and easily accessible.

4.1.1. Speed of Ifis' Websites

The survey questionnaire includes a question regarding the speed of the IFIs' websites to assess the performance of IFIs in terms of customer experience.

More than half (51%) of the respondents have no issue with the speed of the IFIs' websites while 22% of the respondents experience otherwise and 27% are indifferent.

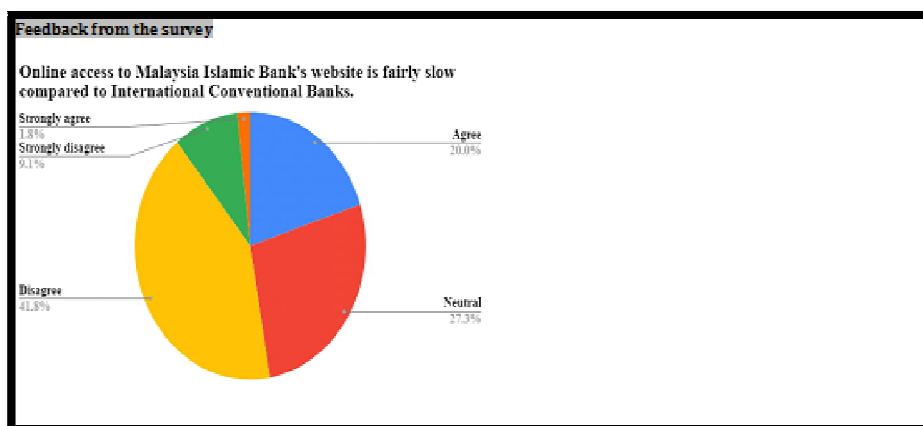


Figure 9

Moreover, according to Abdul Shakoor in his interview, websites of Islamic banks are as good as any other banks in Malaysia including International Conventional banks. Usually, the Islamic subsidiary banks' websites are developed by IT personnel of the parent companies and hence, they are as good as conventional counterparts. To illustrate, Maybank websites for both Islamic and conventional counterparts are relatively comparable.

4.1.2. Cashless Transactions

On top of that, online payment platform is also used as another yardstick to assess IFIs. BNM in its 10-year Financial Sector Blueprint 2011-2020 states that electronic payments will be promoted, as the preferred medium for economic transactions given it is cheaper and more convenient to use than paper payments. International studies reveal

that e-payment transactions cost ranging from one-third to half of the paper-based instruments with savings up to about 1% of a country's annual GDP. According to the World Payments Report 2015, the country that has the highest usage of cashless payments is Finland with about 450 non-cash transactions per inhabitant, followed by the USA (360) and the Netherlands (350) while Singapore and China are taking the lead in Asia (Chua 2016).

As an example, Hong Leong Islamic Bank has collaborated with UCSI University since May 2016 to roll out cashless transactions. The new UCSI student card and staff ID card have two chips — one for on-campus access and one for banking transactions while all vendors on campus have agreed to open Hong Leong accounts to accept payments via mobile phones (Chua 2016).

Another illustration is the 'bazar delivery' website, which has been in operation since April 2020, initiated by Bank Muamalat Malaysia and online payment gateway ToyyibPay in cooperation with digital payment provider PayNet via their eFPX payment scheme. This e-commerce platform provides a simple and easy solution for merchants and the public to sell and buy a wide array of traditional Malaysian delights during COVID-19 Movement Control Order (Birruntha 2020).

All in all, after considering the IFIs' websites and the e-payment facilities as part of the observations, there are no significant deviations seen between the online platforms initiated by IFIs and other banks in the industry.

4.2. Product Innovation

As technology becomes integrated with the finance industry, it may be perceived that banks and Fintech start-ups as opposing forces fighting for the market share. The reality is that both sides need each other just as much as they need to compete with each other (Zigurat 2019).

Fintech start-ups have taken funding from banks and often rely on the banking and back-office partners to deliver their core products. Banks, on the other hand, have acquired Fintech start-ups or invested in them to leverage on the new technology to upgrade their existing operations and offerings.

From the survey, 35% of the respondent's regard product innovation by IFIs via the digital platform is at least on par with other peers in the industry. 32% of the respondents, however, are of the opinion that the IFIs are not that innovative while the remaining 33% are indifferent.

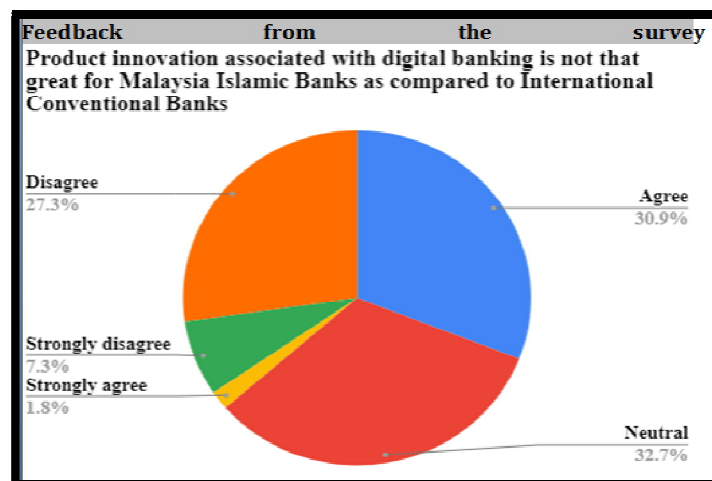


Figure 10

Abdul Shakoor in his interview remarks that Islamic Banks are currently doing a good job in product innovation, but there is room for further improvement. Examples of products introduced by IFIs via digital platforms are as follows:

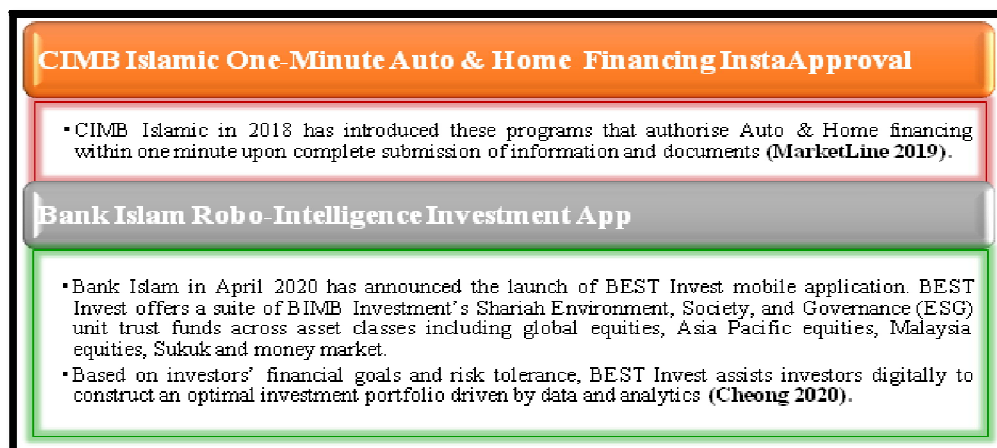


Figure 11

In summary, mixed feedback has been received regarding IFIs' progress on product innovation from underperforming to at least on par with other banks in the industry. IFIs certainly need to zoom into this area to troubleshoot the deficiencies.

4.3. Technology —Process Agility

An agile business is able to be flexible, innovative and seize market opportunities (Nicoletti 2017). Fintech is forcing the IFIs to revisit the customer relationships vis-à-vis the operations. To illustrate, customers nowadays demand interaction with banks via their mobile phones and banks that fail to follow will be left behind. To be relevant today and in the future, digital innovation linked to customer lifestyle is extremely important.

McKinsey points out that technology agility & scalability are particularly urgent in 5 major areas of retail banking —
(1) Consumer finance (2) Mortgages (3) Lending to SMEs (4) Retail payments and (5) Wealth management

Figure 12

Source: Dietz, Khanna, Olanrewaju and Rajgopal 2015

It is critical for the brick-and-mortar IFIs to speed up their digital transformation in order to survive, as their relatively high-cost structure will make it difficult to compete with other digital banks. This Paper also seeks feedback on the IFIs' online facilities to assess their technology readiness.

From the survey, 44% of the respondents are of the view that the IFIs' online facilities are more or less about the same as other banks. Nonetheless, 31% of the respondents agree that IFIs offer lesser online facilities relative to their global conventional peers while the remaining 25% are indifferent.

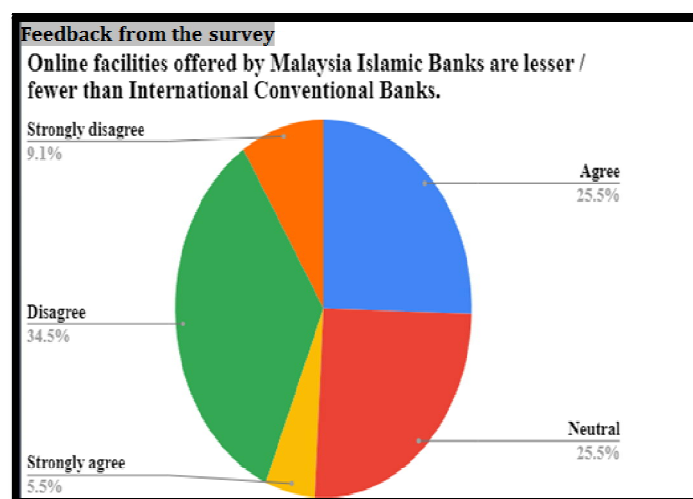


Figure 13

Even though the survey indicates that the IFIs' online facilities are generally on par with other peers in the industry, there are one-third of the respondents who regard IFIs still underperforming in this aspect. The questionnaire further seeks feedback regarding the prospect of the IFIs based on the current business model.

More than half of the respondents (60%) are positive that IFIs have a bright prospect in the Fintech field while only 7% are sceptical and the remaining 33% are indifferent.

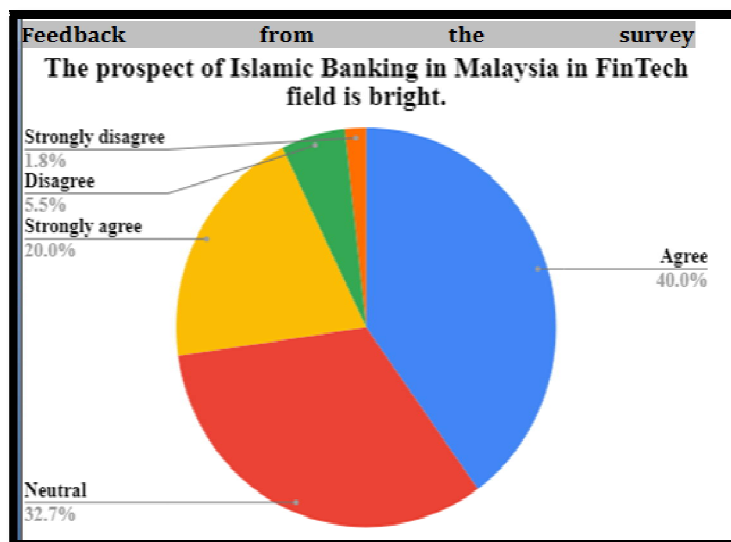


Figure 14

The findings suggest that digital banking is still a largely untapped segment in the IFIs' ecosystem. To unlock this potential, it is vital for IFIs to put in place a flexible and robust business model that is relevant and efficient, which will ultimately facilitate the implementation of digital strategies while ensuring Shariah compliance.

4.4. Overall

As for the status to-date, 38% of the respondent's regard IFIs as doing fine, not lagging behind in the Fintech field, while 33% are indifferent. Nevertheless, 29% of the respondents consider IFIs still slow to embrace change.

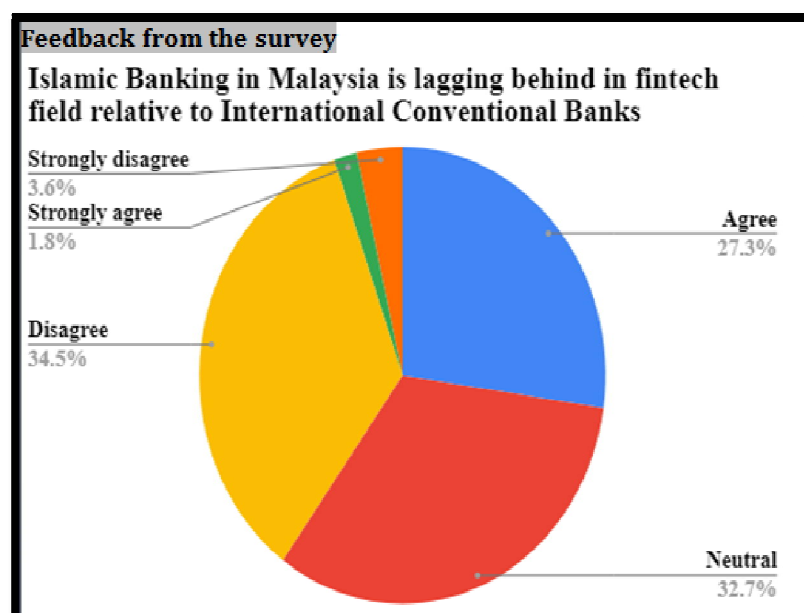


Figure 15

Abdul Shakoor in his interview opines that Islamic Banking in Malaysia is as good as other institutions in adopting new technologies. There is a lot of potential for Fintech in Islamic banking in Malaysia; new platforms are being built using technologies such as blockchain and smart contracts in areas such as Waqf and Zakat. The future seems bright and promising.

From the survey, it is observed that IFIs in Malaysia are in the midst of catching up to be on par with other banks in the industry. The use of technology is no longer an option but a necessity and Islamic finance players must continue to innovate to capture the growth opportunities.

- The key takeaway from the Study is that IFIs need a digital plan with product innovation focusing on customer needs as an immediate / critical priority. Consistently innovate to provide solutions for customers and continuous engagement via social media are part of the strategies to boost the market share.
- Technology agility shall be set as a high / major priority. The structure of the IFIs is historically hierarchical and silo-based. Banks must flatten their organisational structures in order to be more flexible, and this will create a foundation for creativity.

- Traditional banks have the advantage of a strong infrastructure as evidenced by the survey results whereby more than 40% of the respondents have no issue with the speed of IFIs' websites and the online facilities. IFIs need to improve constantly the online services, paying extra cautious on data privacy and cyber security threats.

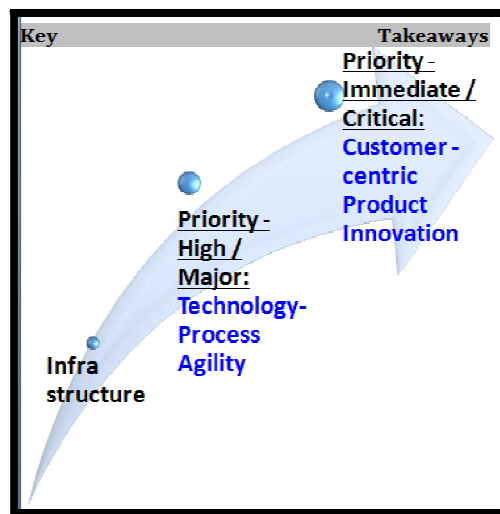


Figure 16

5. Findings: Challenges, Gaps & Opportunities

Our findings suggest that lack of talent, lack of public awareness, stagnation in management, cyber security & data privacy as well as regulatory & Shariah-compliant issues, are the main challenges faced by the IFIs to swiftly progress in the Fintech space.

5.1. Lack of Talent

The Fintech Association of Malaysia President, Ridzuan Aziz remarks that the challenges faced by Islamic Fintech are predominantly in relation to personnel. 'What we have is a pocket of people who know about Islamic Finance on one side, and financial technology on the other side, and there is a gap in between' (Fintech Summit 2018).

Additionally, the Finance Accreditation Agency (FAA)² Chief Executive Officer (CEO) Dr Amat Taap Manshor points out that at least 50% of talent must fall under the skilled category for Malaysia to be a fully developed nation— we currently have 30% (Ho 2016). The talent shortage is particularly critical at the middle management and specialist levels due to limited skill pool and inadequate talent in the pipeline.

Digitalisation requires a shift in the mix of skill-sets. Tengku Datuk Seri Zafrul Aziz, ex-CEO of CIMB Group says that the bank is looking for the 3D skilled people — data, digital and design, which at present only make up about 10% of the Group's workforce (Paul Raj 2020).

Nearly half (40%) of the respondents agree that there is a talent shortage in Islamic Fintech while 24% are indifferent. 36% of the respondents nonetheless are of the view that the talent pool of Islamic Fintech in Malaysia is adequate.

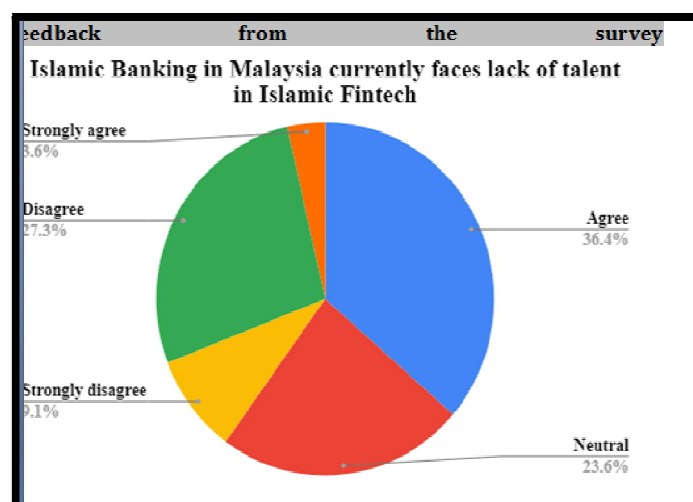


Figure 17

² FAA is an independent quality assurance and accreditation body supported by BNM and the Securities Commission Malaysia. It provides quality assurance and accreditation for training institutions and the financial services industry, particularly in Islamic finance.

Furthermore, Abdul Shakoor in his interview also concurs that the shortage of qualified technical personnel is the biggest challenge faced by Islamic Banking in Malaysia

Besides, Korn Ferry— one of Malaysia's top headhunters, which banks use to help find key talent shares that the bulk of hiring recently has been by Consumer Banking and Islamic Banking, where much of the transformation into digital space is taking place (Paul Raj 2017).

5.2. Lack of Public Awareness

Certain Malaysians are not that well-versed and still sceptical about digital banking and Fintech innovations. Dr Farrukh Habib, a researcher with the International Shariah Research Academy for Islamic Finance (ISRA) highlights that Malaysia has a solid framework in Islamic Banking but somehow the tech part is lacking (Pikri 2019).

Moreover, the Fintech Association of Malaysia President, Ridzuan Aziz remarks that the low level of financial literacy, as well as the basic knowledge of Fintech among Malaysians, has slowed down the growth of the local Fintech industry (Kwang The2019).

Similarly, the survey feedback as depicted in the diagram below shows that only 15% of the respondents have excellent and very good knowledge of Fintech platforms while 25% opine that they have a satisfactory / average level of awareness. It is worth noting that 60% of the respondents admit that their Fintech knowledge is rather fair and poor, signalling more needs to be done to educate the public.

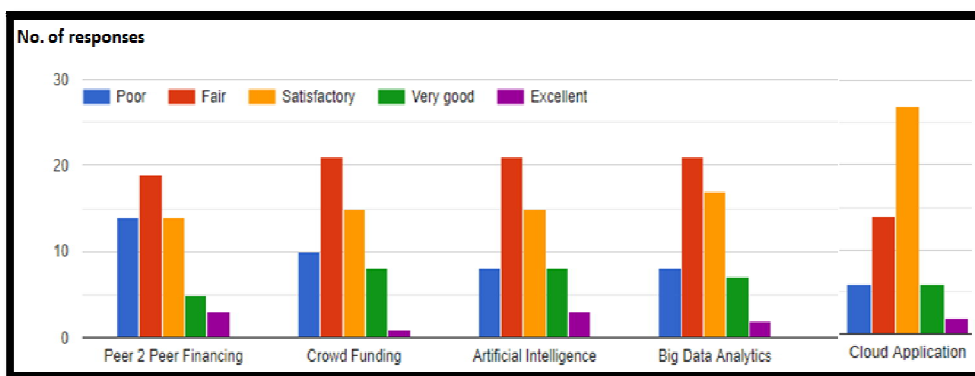


Figure 18

5.3. Comfort Zone & Stagnation in Management

It has been a steep learning curve for IFIs maneuvering through a digital era where traditional banking has been significantly transformed. Abdul Shakoor in his interview comments that the risk-averse culture may affect the adoption of new technology by the Management of IFIs. Nevertheless, the hurdle shall be resolved once the benefits of these innovations are properly explained.

29% of the respondents are of the opinion that IFIs are considered slow to respond to changes due to their risk-averse culture while 29% of the respondents, however, disagree with the statement and 42% are indifferent.

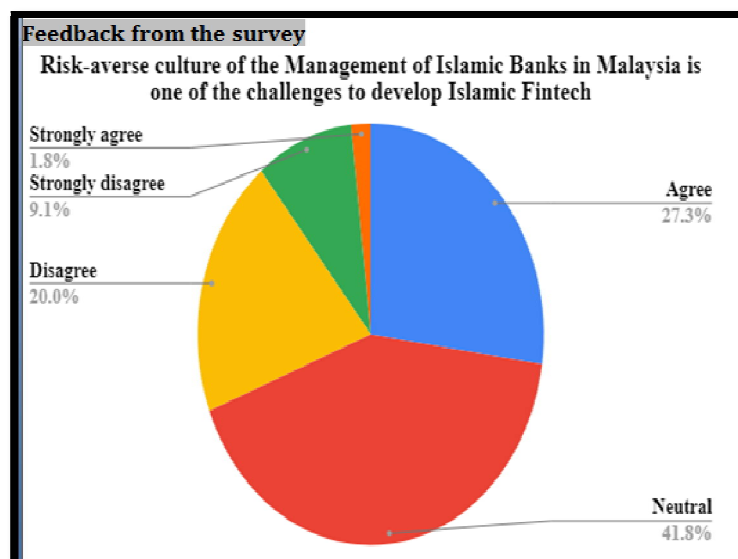


Figure 19

Even though the survey respondents are mostly neutral, Sedania As-Salam Capital CEO Nisa Ismail is of the view that most IFIs prefer to adopt a wait-and-see attitude and it is not easy to get banks to collaborate as Fintech partners (Noordin 2019).

For banks to compete successfully with Fintech startups — there must be a culture change. IFIs must not be held back by legacy — legacy technology, legacy processes and, most importantly, legacy thinking. Culture change is a major part of the overall transformation needed, and it must be championed from the top down to make it happen.

5.4. Cyber Security & Data Privacy

According to Kok (2014), most Malaysians are still reluctant to perform online transactions due to security and privacy reasons. Cyber security — or lack of it — is currently the top risk that most Asian organisations face. To illustrate, the 2017 Global Cyber Security Index ranked Singapore as the most cyber secured country in Asia, while Malaysia ranked third (Raja Chellam 2019).

Although Fintech allows for greater convenience, it does have its fair share of issues, including cyber security and data privacy. In Malaysia, cyber security breaches more than doubled from 3,564 cases in 2009 to 7,962 cases in 2017 (Goh 2019). Fintech News Malaysia (2020) reports that 78% of Asia Pacific banks claim the introduction of real-time payment platforms has resulted in increased fraud losses.

Given the foregoing, it is vital for the IFIs to tag along with the best practices in the governance and due diligence in order to be a trusted banking platform— transparent and competitive in providing a seamless experience for customers.

From the survey, 44% of the respondents disagree that cyber security of Islamic Banks in Malaysia under-performs other industry players, particularly International Conventional Banks while 40% are indifferent. Only 16% of the respondents, however, are of the view that cyber security of Islamic Banks in Malaysia is still way behind their conventional counterparts.

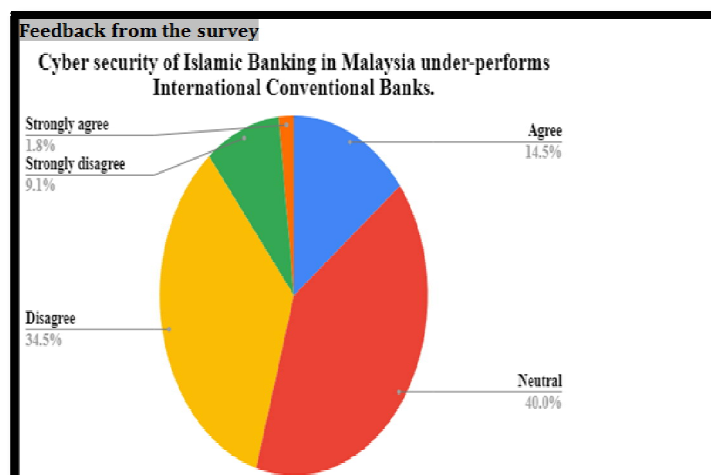


Figure 20

The above suggests that the cyber security of IFIs in Malaysia is generally on par with the industry. As well, Abdul Shakoor in his interview comments that Islamic Bank is as good, if not better than any International banks. For illustration, when doing online banking with Maybank Islamic - any money transfer requires user confirmation via authentication code sent to the customer's phone. Islamic Banks have implemented other security features on par, if not better than International standards.

According to a survey conducted by the Chief Information Officer (CIO) Academy Asia (CIOAA) in 2019 with 70 CIOs as the participants, cyber security and data analytics were highlighted as the key focus areas in 2019. Approximately 70% of respondents said that the budget for the next 1 to 2 years had been allocated mostly for cyber security, risk management and data analytics (Raja Chellam 2019).

IFIs alongside with other players in the banking industry are in the midst of enhancing the skill-sets and approaches to address anti-money laundering issues, client sustainability assessments, cyber security and data privacy. Those who are able to navigate this shift will be the winners in the long run.

5.5. Regulatory & Shariah-compliant Issues

On the local front, regulatory hurdles are more or less about the same across the banking industry, but Shariah contracts are regarded as more complex than conventional ones. For instance, Global Head of Islamic Finance at Fitch Ratings Bashar Al Nator remarks that Islamic banks face challenges that conventional banks do not, such as regulatory limitations and Shariah-compliant concerns (Fintech Summit 2018).

From the survey, 47% of the respondents, however, disagree that Shariah-compliant concerns hinder the development of Islamic Fintech while 31% of the respondents think otherwise and 22% are indifferent.

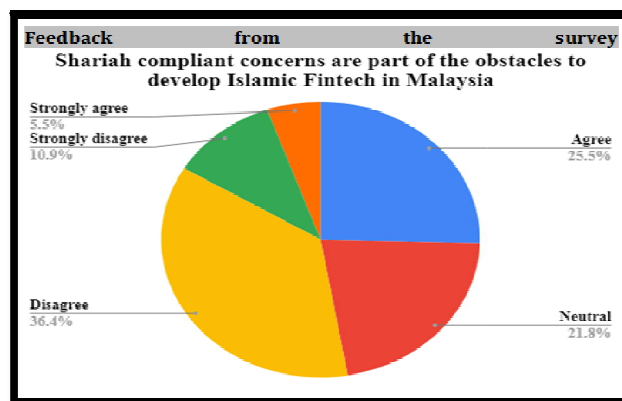


Figure 21

Additionally, Abdul Shakoor in his interview opines that Shariah concerns should not act as interference for Islamic Fintech in Malaysia given Malaysia has a well-established Shariah governance framework in place, which has been consistently updated to be in line with the advancement in the industry.

5.6. Overall

- The survey findings highlight that lack of talent, stem from lack of public awareness and interest are the key challenges, which need to be addressed rather urgently given these are industry-wide concerns.
- Besides, it is advisable for the Management of IFIs to be proactive. It may be helpful to hire the right people who could creatively blend IT and business functions — to drive the digital transformation.
- Traditional banks can no longer rely on out-dated practices. Now, **cyber security and data privacy** are the areas, which need to be tackled holistically, riding on the back of robust **regulatory and Shariah-compliant framework**.

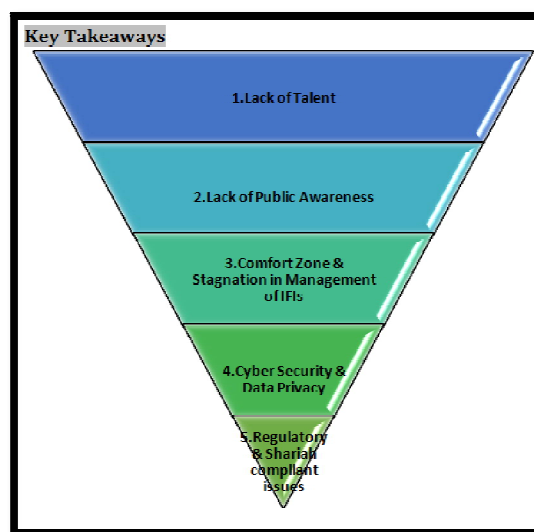


Figure 22

6. Recommendations: Way Forward

6.1. Government Is the Driving Change

Chief Executive of Malaysia Digital Economy Corporation Dato' Yasmin Mahmood in her keynote address at Finnovasia in 2017 said that the growth of Malaysia's digital economy stood at 17.8% of the country's total GDP in 2017, and was projected to meet or exceed the 18.2% target set by the government in 2020 (Brian 2017). The young Malaysians, digitally native Muslim demographic group are pushing for innovation in Islamic finance with the government - especially those with broader Islamic economy strategies - is expected to lead the response.

The respondents of the survey nonetheless indicate that the performance of the government in promoting Islamic Fintech is below satisfactory — fair level (45%) and poor (20%). Abdul Shakoor in his interview advises that the decision-makers in the Islamic banking field need to be made aware of the fact that adoption of new technologies is essential for the industry, a good example will be data analytics and its potential in risk management and marketing.

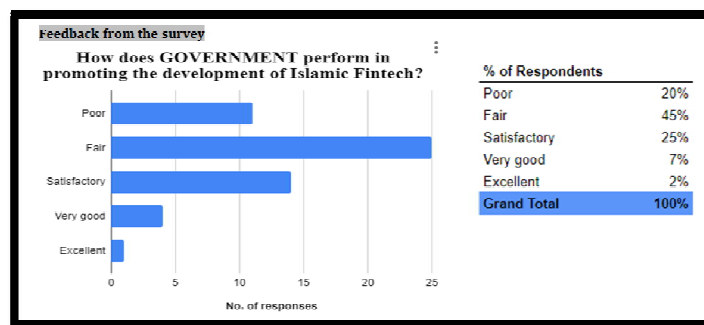


Figure 23

BNM and Securities Commission Malaysia (SC) are the key regulators, working closely with the Ministry of Finance to create an organised Fintech ecosystem in Malaysia. On top of that, Malaysia Digital Economy Corporation Sdn. Bhd., a government-owned entity set up in 1996, has also actively involved in driving the digital transformation across the public and private sectors in Malaysia (Lee and Low 2018)

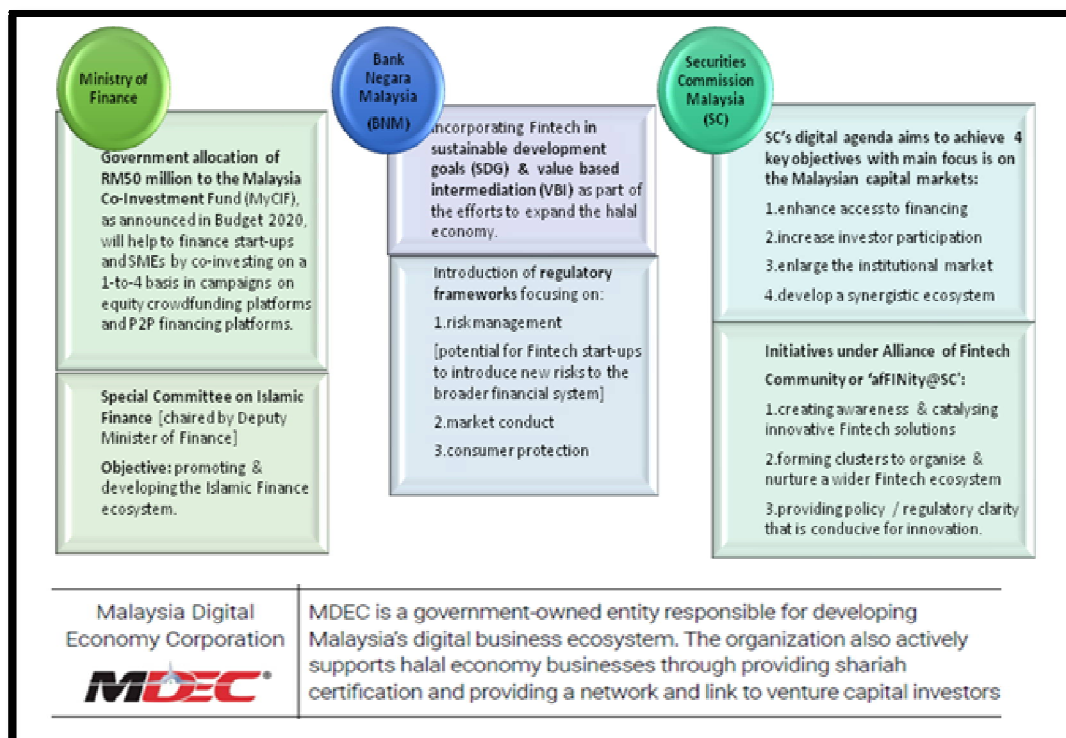


Figure 24

One of the BNM's key focuses is to foster greater collaboration between the banks and non-banks — including telecommunications and Fintech companies — to drive infrastructure development, network expansion and enhanced customer experience. For illustration, BNM since 2016 has transformed the National Payments Advisory Council — to be more effective and inclusive. The Council, chaired by the BNM Governor, now comprises representatives from both the supply (providers of payment services) and demand (users of payment services) sides of the payment market. This Council shall serve as an important platform to drive industry collaboration to enhance the payments landscape. The mobile payment industry is regulated under the Financial Services Act 2013 and the Islamic Financial Services Act 2013, under which providers of mobile banking and payment services are subject to various regulatory requirements (Yong 2016).

Consumer protection must be set as the regulators' priority in addition to facilitating the entry of new entrants in the market. It is crucial for government authorities to secure the necessary knowledge and understanding to oversee the use of technology within the financial industry. The more exchange and consultancy that is established between government agencies and the private sector, the better the results will be.

At this point, time-to-market is of the essence and the faster the authorities respond cross-divisions with approvals to support the sector; the better is the chance to manifest Malaysia as an Islamic FinTech Centre of excellence and a reference point in the Islamic world.

6.2. Regulatory Innovation

With the challenge of global competition, shifting customer expectations and the emergence of new technologies, the regulators can no longer rely on outdated policies to safeguard the financial industry.

In response to the wave of digital investment and financing avenues, BNM and SC have consistently released new guidelines and frameworks to create a more robust, sustainable and credible industry for providers and investors. Important policy documents are listed in the diagram below:

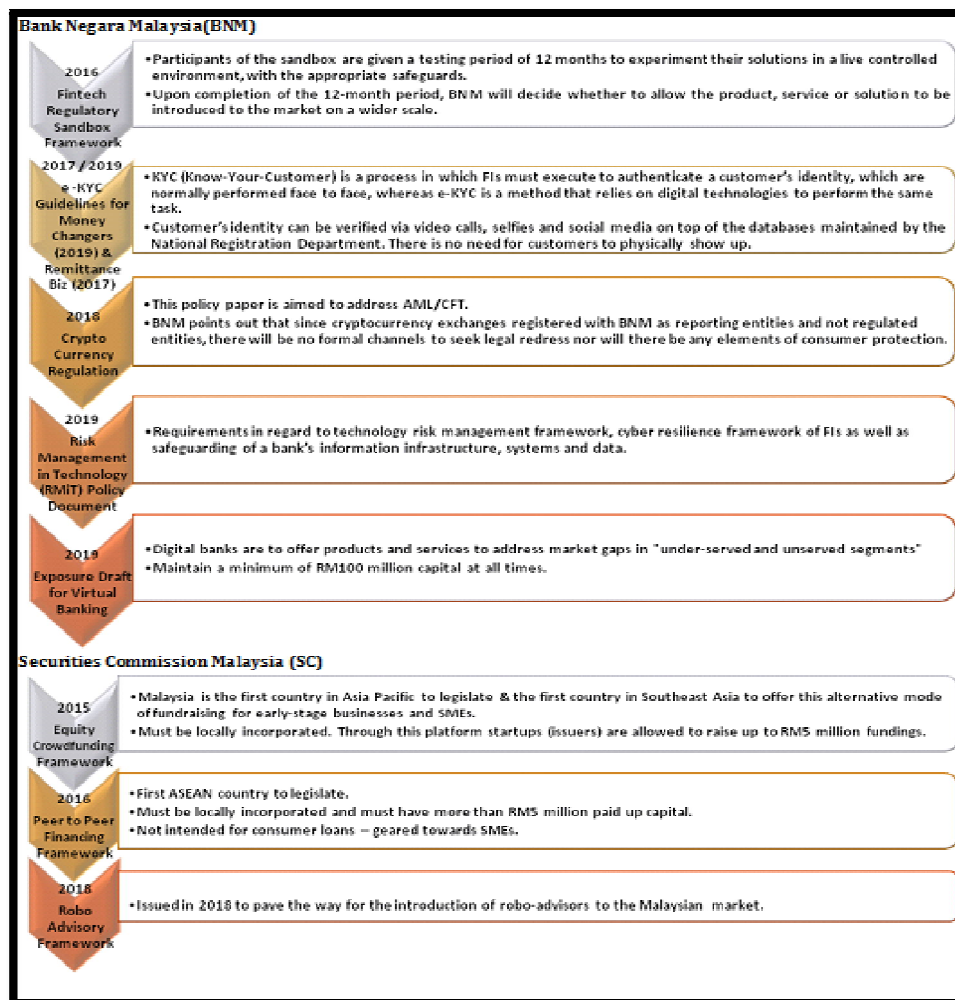


Figure 25
Sources: Ridza 2017, Malaysia Fintech Report Year 2018 and 2019

In terms of Islamic Fintech, nearly half of the respondents recommend a separate guideline to be issued specifically for the Islamic finance industry particularly in the areas pertaining to Shariah-compliance. This is primarily to mitigate confusions and conflicts among Shariah scholars, Islamic commercial law experts and Islamic finance industry players.

Nearly half (45%) of the respondents are of the opinion that a separate set of regulations may be needed to govern Islamic Fintech in Malaysia while 33% are indifferent. 22% of the respondents nonetheless Fintech regulations covering both conventional and Islamic are acceptable.

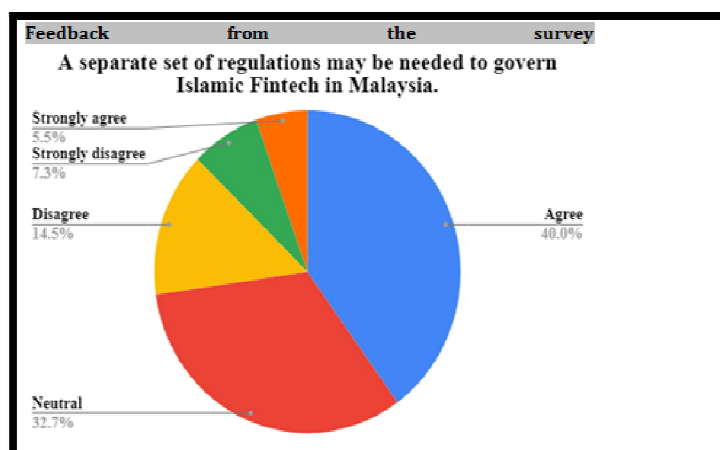


Figure 26

Apart from ensuring digital platforms have sound financial and business practices, it is also critical for the regulations in place to promote the fair treatment of consumers. More needs to be done to make the digital transactions more transparent and accessible with areas of concern include data tracking, KYC Compliance and Customer Due Diligence.

6.3. IFIs

From the survey, nearly half of the respondents consider IFIs’ participation in promoting Islamic Fintech is below satisfactory — fair level (40%) and poor (7%).

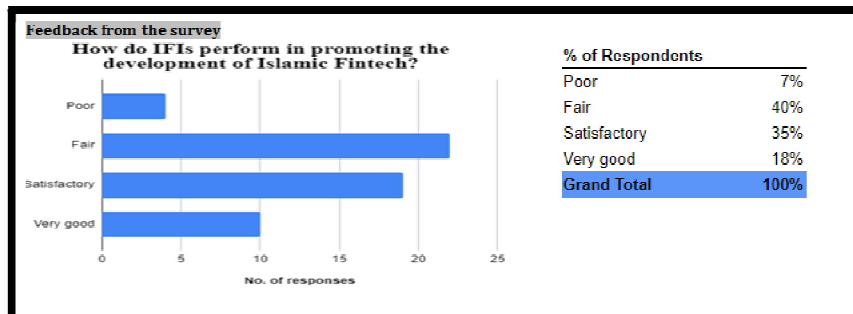


Figure 27

To stay relevant in the evolving digital era, it is advisable for the IFIs to reengineer the entire organisation — invest in technology and talent — in order to embrace challenges, put forward by Fintech attackers.

6.3.1. Leadership

It is crucial for the Board and the top management to set the innovation agenda as the priority and willing to allocate capital and resources to materialize the transformation.

An illustration: Kuwait Finance House Malaysia (KFHM)
 KFHM has been investing heavily on digital strategy, allocating RM38 million in 2017 for its digital banking transformation with 3 focus areas — (1) internet banking (2) mobile banking and (3) its website.
 (Paul Raj 2017).

Figure 28

On top of that, the anchor of this transformation must be the high-calibre leaders who dare to execute bold ideas in unconventional ways. These champions shall be the key drivers to capture opportunities, pursuing business diversification while expanding the product suite.

6.3.2. Organisational Culture

The mindset of the bankers must be changed. McKinsey suggests banks to focus on building a distinctive set of digital capabilities, covering the main areas as summarised in the diagram below.

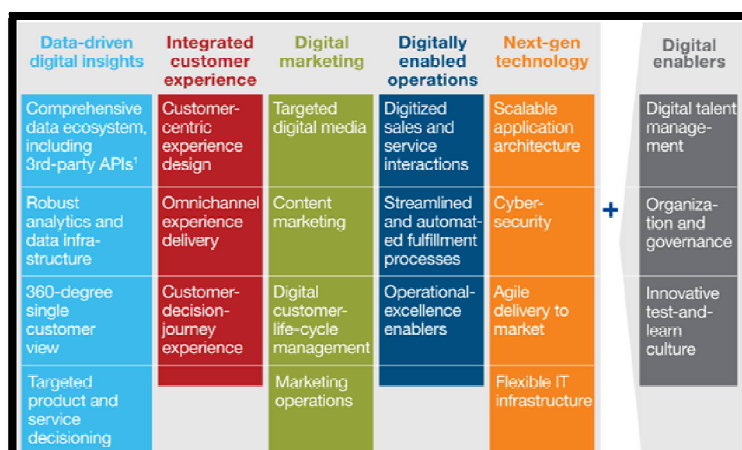


Figure 29

Source: Dietz, Khanna, Olanrewaju and Rajgopal 2015

IFIs should (1) build a comprehensive customer data ecosystem and utilise this database for critical activities including customer acquisition to cross selling and collections. It is important for the IFIs to (2) create an integrated customer experience, minimizing technical glitches. IFIs must also (3) build digital marketing capabilities using e-commerce players as guidance while (4) simplifying and streamlining the processes to mitigate inefficiencies. Besides, IFIs need to migrate (5) to mobile and cloud platforms, retiring the legacy systems soonest possible and addressing cyber security threats concurrently. (6) The organisational structure is to be revisited, replacing with the flat structure to enable speedier decision-making and faster adaptability to external changes.

6.3.3. Customer-Centric Product Offerings

IFIs need to step up to create real differentiation in its product offerings while simplifying the product structures to alleviate public confusion, and at the same time offering lucrative returns to be competitive.

Products, by leveraging on technology such as big data analytics, shall be fine-tuned to provide customised solutions for customers. Intensive research and development are super important at this time.

The Boston Consulting Group's Global Retail Banking 2016 Report states that the benefits earned by banks from enhancing their digital capabilities include 50% increase in revenue per customer, expanding customer penetration by 30% and 20% reduction in operating costs (Chua 2016).

6.4. Collaboration Models

Mohamed and Ali (2019) advise that the fastest way to evolve is for the traditional IFIs, which have strong capital and client-base as well as robust risk management capabilities, to embrace new partnerships and collaborations with young and forward-looking start-ups and Fintech developers who will provide the technological skill-sets to reinvent the future of financial services.

Even though these Fintech platforms have the ability to replace the traditional banking functions, most of them still run their operations, riding on the customers' credit and deposit (savings and current) bank accounts. For IFIs, organic development has proven to be slow and costly. Strengths and weaknesses of both banks and Fintech companies suggest that both will often do better by cooperating rather than by competing.

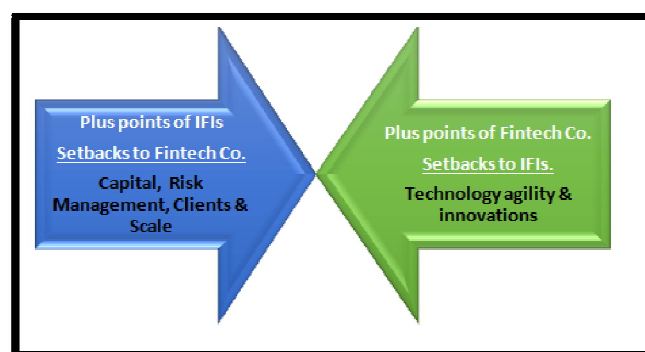


Figure 30

Instead of seeing Fintech companies as competitors, it is advisable for the IFIs to explore the collaboration models with them to strengthen the market share. Examples of collaborations between IFIs and Fintech companies are as follows:

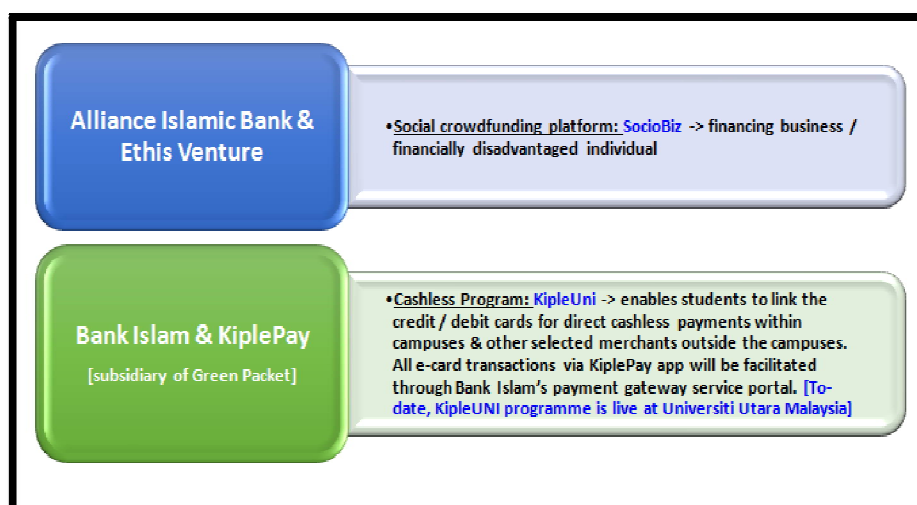


Figure 31

6.5. Education

Apart from the infrastructure, IFIs also need talent that can support the development of Fintech. In 2016 PricewaterhouseCoopers (PwC) survey, 70% of the CEOs view the availability of key skills as a major threat to organisational growth worldwide while 2016 report on global human capital trends by Deloitte states that 63% of the survey respondents believe the existing learning programs are ineffective (Ho 2016).

Same as the survey performed in this research, nearly 70% of the respondents are of the opinion that educational institutions are currently underperforming — fair level (53%) and poor (15%) — in promoting Fintech development.

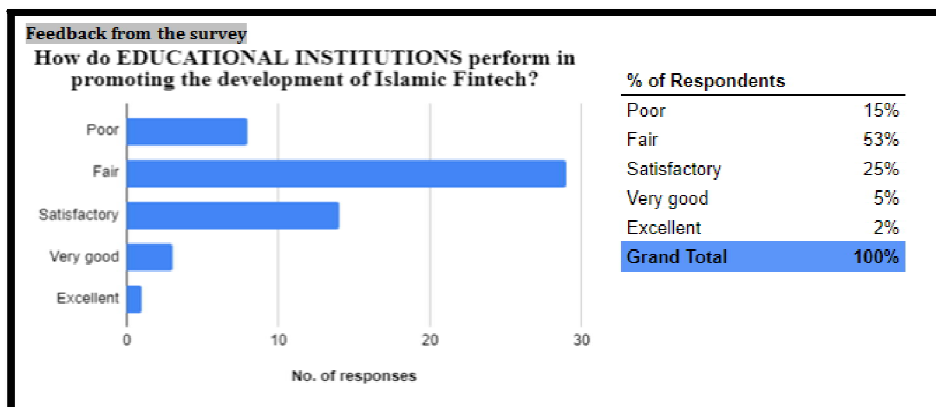


Figure 32

Nurturing scientific mindset and culturing science, technology and innovation (STI) among Malaysians are to be set as a priority. It is advisable for the government, as the principal coordinator to amplify the efforts collaborating with industry and the education system to enable Malaysians to be ready for the digital revolution. According to Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), Malaysia currently provides 14.6% of the country's total research and development allocation for experimental development compared to neighbouring countries such as Thailand (51.7%) and Singapore (48.3%) (Bernama, 2020).

To improve this, it is part of the government plans to establish steering committees involving industry representatives to perform research and at the same time to share experiences, to discuss the challenges in the face of global competition and to brainstorm solutions to adapt to rapid technological developments. High-tech companies in Korea for instance work with nearly 5,000 doctoral graduates to carry out research and innovation development. On the local front, Collaborative Research in Engineering, Science and Technology (CREST) in the Electrical and Electronics sector in the northern zone of Peninsular Malaysia is one of the successful collaborations with the industry. Moving forward, the collaboration will be expanded to four sectors, namely (1) health and well-being; (2) Fintech in Islamic finance — services; (3) industry 4.0 — manufacturing and (4) halal supply chain under the MESTECC's i-Connect programme (Bernama, 2020).

On top of that, BNM has also established a steering committee comprising various industry stakeholders to re-energize the Islamic finance talent development (Personal Wealth Team 2016).

Another example is the Islamic Digital Economy (IDE) accelerator called Fintech Lab. It was established in collaboration with MDEC and Department of Islamic Development Malaysia (JAKIM), with the main aim is to help at least 60 new and existing IDE start-ups. Fintech School is part of the initiatives whereby Fintech entrepreneurs working together to create knowledge modules based on their own experiences. It is a blended learning program — a combination of online and face-to-face learning, open to bricks-and-mortar companies in the halal industry and Islamic finance space (Jacobs 2019).

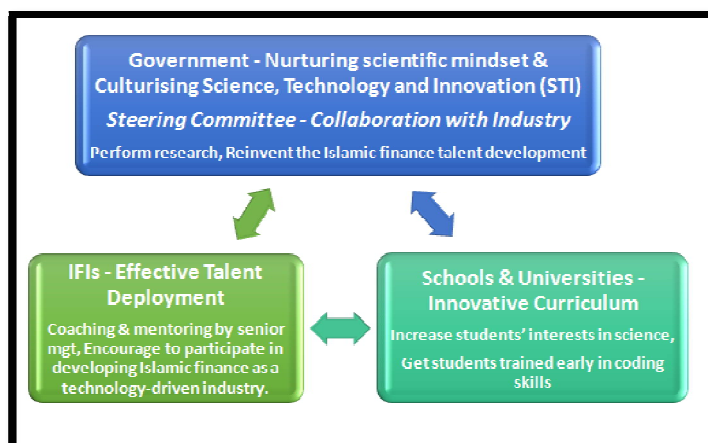


Figure 33

As illustrated in the diagram above, IFIs must also actively play their role in the acceleration of talent enrichment at the institutional level. Mentoring and encouraging staff to get involved in the digital product offerings are vital to groom talents with the prerequisite skill-sets to be a competent Islamic banker in the Fintech era.

Most importantly, it is recommended for the schools and universities to introduce the innovative curriculum to enhance students' interests in science. Students' exposure to coding must be initiated at the earliest stage and by including Fintech as part of the curriculum, hopefully, will foster interest in technology and innovation.

6.6. Mass Media

Continuous pursuit of education and awareness of Islamic Finance and Fintech among the public is equally important. From the survey, most of the respondents regard the contribution of mass media in promoting Islamic Fintech is below satisfactory level – Poor (15%) & Fair (47%). According to Abdul Shakoor, there is a decent coverage about Fintech in mass media, but more could be done, specifically in promoting the adoption of these new technologies.

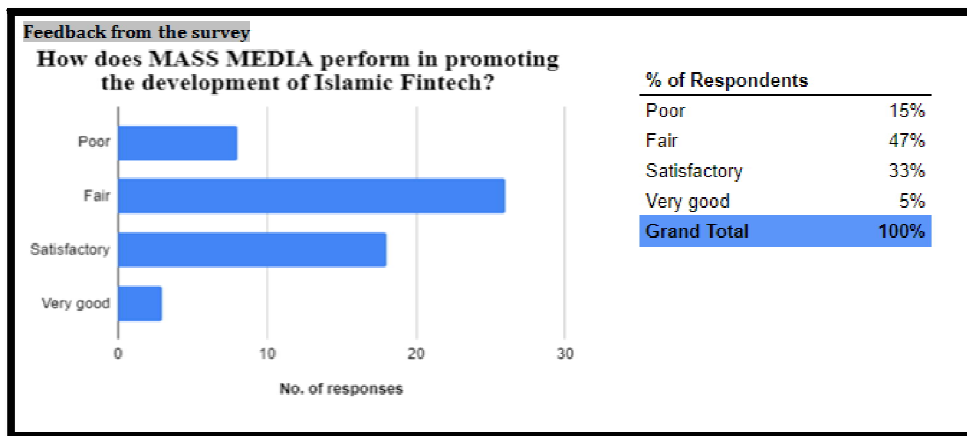


Figure 34

To fast track the growth, the involvement of the mass media must be enhanced to provide information to the public at large on how these digital platforms work. Young, middle-aged and old generations shall be the main target groups. For instance, 40% of the investors in equity crowd funding platforms are from a younger generation — aged 35 and below (Brian 2017). It is also observed that senior-age group tend to contribute higher funding relative to youngsters as shared by Ethis Ventures, a Singapore-based P2P Financing platform covering 50,000 registered investors regionally — of which approximately 2,000 are Malaysians. Those above 40 have been contributing larger funds to this platform, although the registered investors are mostly aged between 30 and 40 (Noordin and Yong 2016).

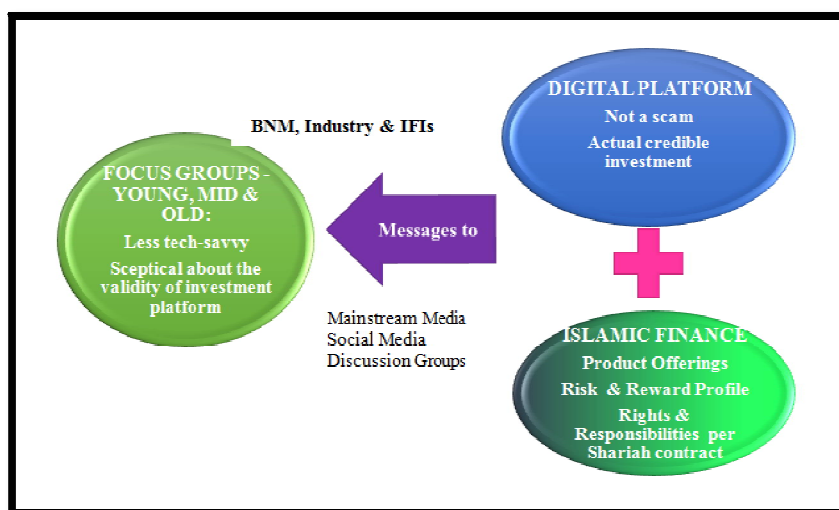


Figure 35

As depicted in the diagram above, it is vital for the mass media to convey the accurate information regarding digital platforms and Islamic Finance primarily to reduce misconceptions and to achieve greater consumer awareness as well as confidence.

BNM and industry have diversified the outreach programs, not only focusing on the mainstream media, but also social media and discussion groups as part of effective engagement channels. Understanding consumer behaviour is the key for policymakers to design appropriate financial literacy initiatives and to undertake policy interventions. In addition, IFIs must also perform their roles to carry out effective communication, ensure clear and timely disclosures of product information and continuous campaigns at the industry level.

7. Conclusion

Local IFIs have taken the initiatives to reinvent themselves, embracing Fintech to play catch-up with other banks in the industry. In terms of Fintech, most IFIs are mostly in the development stage with innovations include Shariah-compliant Robo-advisory services, crowdfunding investments and P2P lending platforms, targeting both Muslims and non-Muslims. It is observed that the critical success factors to differentiate winners from losers are (1) customer-centric product innovation, (2) agile business model and (3) robust infrastructure that is highly resilient to data privacy and cyber security threats.

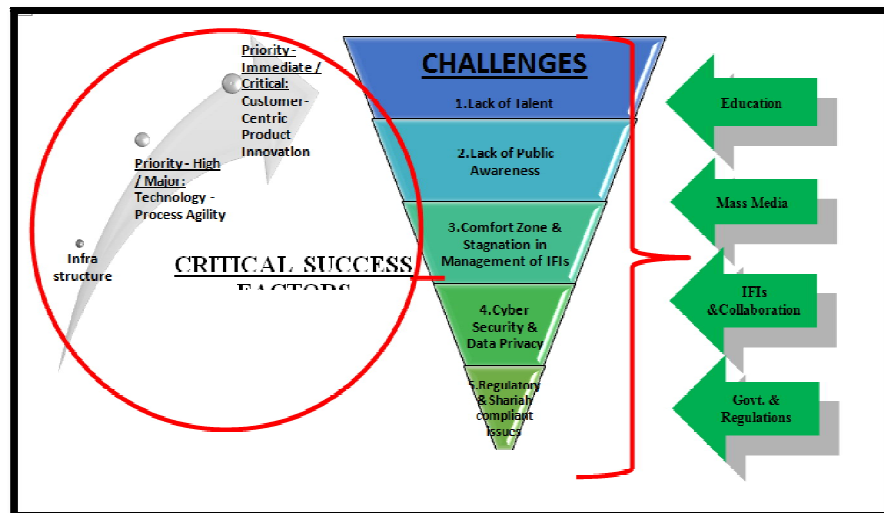


Figure 36

The research findings highlight that the greatest challenge for the IFIs to progress smoothly is lack of talent, primarily attributed to lack of public awareness and interest. The risk-averse culture of IFIs coupled with cyber security and data privacy are also regarded as the main obstacles for the industry to grow in this field.

Building the Islamic Fintech ecosystem is complicated and it involves various market participants and stakeholders collaborating towards achieving the shared goals of a unified Islamic economic community, increased financial inclusion for the unbanked and the seamless cross-border flow of services and payments. The survey, however, shows that government, IFIs, educational institutions and mass media are recurrently performing below the satisfactory level in promoting Islamic Fintech.

Going forward, digital evolution needs to be integrated into the bank's business model to provide an enriched customer experience. More needs to be done to educate and cultivate a new mindset among the public to build a local talent pool. Regulatory compliance requirements have also amplified the emphasis to protect customers. There should be discussion sessions among these stakeholders, working together to introduce affordable Islamic financial products via digital platforms, which cater to the needs of customers.

In essence, Bank Negara's vision for the future of Fintech is to bring about a financial sector that is not only safe, agile and collaborative but also transformative and sustainable.

8. References

- i. Arner, Barberis and Buckley. 2016. *The Evolution of Fintech: A New Post-Crisis Paradigm?* University of New South Wales Law Research Series.
- ii. Bank Islam Annual Report. 2018. *Value-Driven Progress – Integrated Annual Report*. Bank Islam.
- iii. Basel Committee on Banking Supervision. 2018. *Sound Practices — Implications of Fintech developments for banks and bank supervisors*. Bank for International Settlements.
- iv. Bernama. 2019. 'PM: Islamic banking players must invest in technologies.' Last modified April 10, 2019. <https://www.nst.com.my/news/nation/2019/04/478016/pm-islamic-banking-players-must-invest-technologies>
- v. Bernama. 2020. 'Two ministries to identify STIE focus areas for 12MP.' The Edge. Last modified Feb 5, 2020. <https://www.theedgemarkets.com/article/two-ministries-identify-stie-focus-areas-12mp>
- vi. Birruntha. 2020. 'Bank Muamalat, ToyyibPay launch Bazar.delivery for Ramadhan delicacies.' *The Malaysian Reserve*, April 27, 2020.
- vii. Brian, Y. 2017. *Fintech could be the solution for regulatory challenges facing Shariah contracts*. International Financial Law Review
- viii. Cambridge Dictionary. 1995. *Cambridge International Dictionary of English*. Cambridge University Press.
- ix. Cheong. 2020. 'BIMB Investment Launches Its First Robo-Intelligence Investment App, BEST Invest.' *Ringgit Plus*, April 16, 2020.
- x. Chua, S. 2016. 'Cover Story: Behind the Fintech Hype.' *Corporate, The Edge Malaysia Weekly*, June 20, 2016 – June 26, 2016.

- xi. Chua, S. 2016. 'Early glimpses of cashless Malaysia on Campus.' *Corporate, The Edge Malaysia Weekly*, July 4, 2016 - July 10, 2016.
- xii. Dietz, Khanna, Olanrewaju and Rajgopal. 2015. *Cutting through the Fintech Noise: Markers of Success, Imperatives for Banks*. McKinsey & Co.
- xiii. EY Fintech Adoption Index. 2017. *The Rapid Emergence of Fintech*. EY.
- xiv. Fintech Summit. 2018. *Fintech & Islamic Finance*. Islamic Fintech Summit.
- xv. Fintech News Malaysia. 2020. 'The Rise of Virtual Banks in Asia is Posing New Cyber security, Fraud Risks,' Last modified March 23, 2020. <https://fintechnews.my/23104/cyber-security/the-rise-of-virtual-banks-in-asia-is-posing-new-cybersecurity-fraud-risks-jumio/>
- xvi. Goh. 2019. 'Riding the Fintech wave.' *The Edge Malaysia Weekly*, June 10, 2019 - June 16, 2019.
- xvii. Goh and Paul Raj. 2019. 'Cover Story: A new banking reality.' *The Edge Malaysia Weekly*, June 24, 2019 - June 30, 2019.
- xviii. Groscurth. 2017. 'Industrial Revolution Timeline.' Twitter, September 28, 2017. <https://twitter.com/crgroscurth/>
- xix. Hill. 2018. *Fintech and the Remaking of Financial Institutions*. Academic Press.
- xx. Ho. 2016. 'More talent development needed in the financial sector — FAA CEO.' *The Edge Financial Daily*, October 19, 2016.
- xxi. Islamic Fintech Report. 2018. *Current Landscape & Path Forward*. DinarStandard.
- xxii. Irfan and Ahmed. 2019. *Fintech— The Opportunity for Islamic Finance*. Routledge.
- xxiii. Jacobs. 2019. 'Accelerator: Capacity building for companies in the IDE space.' *Enterprise, The Edge Malaysia Weekly*, June 10, 2019 - June 16, 2019.
- xxiv. Kok. 2014. *70% of Malaysian conducted online shopping once a month*. Sin Chew Jit Poh.
- xxv. Lee and Low. 2018. *Inclusive Fintech — Blockchain, Cryptocurrency*. World Scientific.
- xxvi. Lipka and Hackett. 2017. *Why Muslims Are the World's Fastest-Growing Religious Group*. Pew Research Center.
- xxvii. Kwang Zhe. 2019. 'Cover Story: Financial literacy the key to the growing Fintech sector.' *Personal Wealth, The Edge Malaysia Weekly*, August 19, 2019 - August 25, 2019.
- xxviii. Malaysia Fintech Report. 2018. *Annual Malaysia Fintech Report*. Fintech Malaysia.
- xxix. Malaysia Fintech Report. 2019. *Touch 'n Go eWallet Malaysia Fintech Report*. Fintech Malaysia.
- xxx. MarketLine. 2019. *Company Profile: CIMB Group Holdings Berhad*. Progressive Digital Media.
- xxxi. Mobius, M. 2016. *Malaysia and Islamic finance in emerging markets*. Islamic Business & Finance Issue 98
- xxxii. Mohamed and Ali. 2019. *Blockchain, Fintech and Islamic Finance — Building the future in the new Islamic digital economy*. Walter de Gruyter Inc.
- xxxiii. Nicoletti. 2017. *The future of Fintech: integrating finance and technology in financial services*. Palgrave Macmillan.
- xxxiv. Noordin, K & Yong, M. 2016. 'When investing meets technology.' *Personal Wealth, The Edge Malaysia Weekly*, December 19, 2016 – December 25, 2016
- xxxv. Noordin, K. 2017. 'Cover Story: Disrupting Islamic finance.' *Personal Wealth, The Edge Malaysia Weekly*, June 26, 2017 - July 02, 2017.
- xxxvi. Noordin, K. 2019. 'Solutions: Country's first fully halal platform for financial products' *Personal Wealth, The Edge Malaysia Weekly*, October 28, 2019 - November 03, 2019.
- xxxvii. Paul Raj, A. 2017. 'KFH Malaysia getting back on its feet,' *The Edge Malaysia Weekly*, May 15, 2017 - May 21, 2017.
- xxxviii. Paul Raj, A. 2017. 'Banks seen hiring again after lull' *The Edge*. Last modified June 27, 2017. <https://www.theedgemarkets.com/article/banks-seen-hiring-again-after-lull>
- xxxix. Paul Raj, A. 2020. '2010 > 2019: Decade of Disruption - Digital disruption a major wake-up call for banks.' *The Edge Malaysia Weekly*, December 30, 2019 - January 05, 2020.
- xl. Personal Wealth Team. 2016. 'Islamic Banking & Finance: Industry's prospects remain positive.' *The Edge Malaysia Weekly*, December 5, 2016 – December 11, 2016.
- xli. Pikri. 2019. 'Malaysia is a Leader in Islamic Finance, But Why Not Islamic Fintech?' Last modified January 2, 2019. <https://fintechnews.my/19512/islamic-fintech/islamic-fintech-malaysia-shariah/>
- xlii. Raja Chellam. 2019. 'Econ 4.0: Are you playing with risk?' *Enterprise, The Edge Malaysia Weekly*, April 8, 2019 - April 14, 2019.
- xliii. Reza. 2019. *Financial Tech (Fintech) According to the Perspective of Shariah*. Ram Reza & Muhammad Publications.
- xliv. Ridza. 2017. *The Life and Law of Fintech*. Sweet & Maxwell.
- xlv. Shabana. 2017. 'Financial Tech (Fintech) According to the Perspective of Shariah.' Last modified December 28, 2017. <https://blog.ethis.co/islamic-fintech-and-islamic-banks/>
- xlvi. Subramaniam. 2019. 'Cover Story: Leap of Faith.' *Personal Wealth, The Edge Malaysia Weekly*, January 7, 2019 - January 13, 2019.
- xlvii. Thomson Reuters' Islamic Finance Development Report. 2018. *Building Momentum*. Thomson Reuters.
- xlviii. Venardos, A. 2005. *Islamic Banking & Finance in South-East Asia – Its Development & Future*. World Scientific.
- xliv. Waupsh, J. 2016. *Bankruption: How Community Banking Can Survive Fintech* (1st edition). Hoboken, New Jersey: Wiley.
- l. Whitehead. 2019. *Malaysia gives the first Islamic Fintech crowdfunding license*. Salaam Gateway.

- li. Willy. 2017. 'BNM: Malaysia an ideal testbed for Fintech growth.' The Edge. Last modified October 10, 2017. <https://www.theedgemarkets.com/article/bnm-malaysia-ideal-test-bed-Fintech-growth>
- lii. Yong.2016. 'Are the days of credit cards numbered?' *Personal Wealth, The Edge Malaysia Weekly*, August 1, 2016 – August 7, 2016.
- liii. Zigurat. 2019. 'Evolution of Fintech.' Zigurat Global Institute of Technology. <https://www.e-zigurat.com/innovation-school/blog/evolution-of-Fintech/>

Appendix

Survey Questionnaire



Less than 15 minutes

We would love to hear your feedback on how Islamic Banking in Malaysia performs in FinTech (Financial Technology).

Next

Please choose your age bucket *

- 10 - 20 years old
- 21 - 30 years old
- 31 - 40 years old
- 41 - 50 years old
- 51 years old and above

Kindly select your profession *

- Student
- Educator
- Executive
- Manager
- Entrepreneur
- Other:

Please choose your level of awareness regarding the following:

	Poor	Fair	Satisfactory	Very good	Excellent
Peer 2 Peer Financing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crowd Funding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artificial Intelligence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big Data Analytics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cloud Application	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Status To-Date

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Islamic Banking in Malaysia is lagging behind in fintech field relative to International Conventional Banks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online access to Malaysia Islamic Bank's website is fairly slow compared to International Conventional Banks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Online facilities offered by Malaysia Islamic Banks are lesser / fewer than International Conventional Banks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product innovation associated with digital banking is not that great for Malaysia Islamic Banks as compared to International Conventional Banks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cyber security of Islamic Banking in Malaysia under-performs International Conventional Banks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Status To-Date

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Shariah compliant concerns are part of the obstacles to develop Islamic FinTech in Malaysia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk-averse culture of the Management of Islamic Banks in Malaysia is one of the challenges to develop Islamic FinTech.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Islamic Banking in Malaysia currently lacks of talent in Islamic FinTech.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A separate set of regulations may be needed to govern Islamic FinTech in Malaysia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The prospect of Islamic Banking in Malaysia in FinTech field is bright.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How do these groups perform in promoting the development of Islamic FinTech?

	Poor	Fair	Satisfactory	Very good	Excellent
Government	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Islamic Banks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mass Media	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Interview Questions

Dear Sir,

Referring to the letter from INCEIF dated 21 February 2020, would appreciate it if you could share your thoughts whether Islamic Banking in Malaysia is lagging behind in the Fintech field.

For illustration:

Islamic Banks in Malaysia - Bank Islam & Maybank Islamic

International Conventional Banks - HSBC& Citibank

Status to Date

What is your view regarding Malaysia Islamic Bank's website – on par / under / outperforms International Conventional Banks, particularly in terms of

- Online access
- Website features

Do you think Islamic Banking in Malaysia is doing well in product innovation associated with digital banking as compared to International Conventional Banks?

What is your opinion regarding cyber security of Islamic Banking in Malaysia? Are they on par International Conventional Banks?

Gaps - Opportunities

- What would be the challenges that hampering the growth of Fintech in Islamic Banking segment?
- Do you think Shariah-compliant concerns are part of the obstacles to develop Islamic Fintech in Malaysia?
- Is it necessary to have a separate set of regulations to govern Islamic Fintech in Malaysia?
- Is the risk-averse culture of the Management of Islamic Banks in Malaysia part of the challenges to develop Islamic Fintech?
- What is your view on the talent in Islamic Fintech? Is it adequate for Islamic Banking in Malaysia?
- Do you think the lack of public awareness is one of the gaps in Islamic Fintech?

Recommendations – The Way Forward

- Do you think the government/regulator needs to beef up the efforts to promote Islamic Fintech?
- Have Islamic Banks in Malaysia done a good job in Islamic Fintech field?
- What is your feedback on the role of mass media in promoting Islamic Fintech?
- Is it necessary to include Fintech, Islamic Fintech in particular, as part of the syllabus in school/university?
- What is your opinion on public participation in Islamic Fintech?

Overall

- Do you think Islamic Banking in Malaysia is lagging behind in the Fintech field relative to International Conventional Banks?
- What is your view on the prospect of Islamic Banking in Malaysia in Fintech field?

Interviewee Profile

Abdul Shakoor Dalvi (or Abdul Shakoor) is proficient in SQL, Java and Python programming languages. He is a Sun certified Java Programmer and has worked on multiple software projects including online trading of stocks, bonds and options. He used to be a software developer covering information technology projects in the USA and Canada. He has extensive database development experience with Oracle, SQL Server and Pervasive.

He has a degree in Business Administration and MBA (Finance) from University of Texas at Arlington, USA and CIFP (Chartered Islamic Finance Professional) and MSc from INCEIF. He is currently pursuing PhD in Islamic Finance at INCEIF. Abdul Shakoor has been selected as an interviewee given his International exposure, coupled with his background in IT; Banking and Islamic Finance fields, which match the scope of the research.