

Enhancing *Waqf* management through fintech in Malaysia: A conceptual framework on the Technology Acceptance Model (TAM)

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ABSTRACT

In Malaysia, academic studies on the mobilisation of cash *waqf* and enhancing its role as a mechanism for socio-economic development through the adoption of fintech (financial technology) is highly abound. Additionally, there are calls from stakeholders to adopt best practices fintech solutions in *waqf* practice to drive efficiency in *waqf* transactions management, ranging from fund mobilisation, investment and disbursement and connecting donors to fundraisers. This study aims to fill a knowledge gap by explaining the factors regarding the deployment of fintech related to the 4th Industrial Revolution to improve the collection and investment of cash *waqf*. This paper proposes a conceptual framework for expanding cash *waqf* collection and performance through fintech in response to the fourth industrial revolution wave study predicting computer technology adoption behaviour. The proposed model is based on a modified framework of Davis's technology acceptance model (TAM) method, which Wallace and Sheetz (2014) adopted in their study titled 'The Adoption of Software Measures: A Technology Acceptance Model (TAM) Perspective'. The model seeks to propose measurement for the independent variable of fintech awareness and knowledge, ease and usefulness of fintech, attitude towards fintech and finally, trust and confidence toward the adoption of fintech. Finally, this study will serve as a valuable guide and provide future research insights to explore this avenue further.

1. Introduction

Fintech (financial technology) has been projected to expand operational efficiency, disintermediation, and transparency in the financial sector, among other sectors, particularly with the advent of the blockchain (Cai, 2018; Mohamed & Ali, 2018). These, among several other advantages offered by fintech solutions, have generated interest in undertaking academic studies on integrating financial technology into Islamic

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finance. For instance, Loo (2018) examined and found a positive relationship between digital innovation and the financial service industry. Using the Technology Acceptance Model (TAM) theory, this study measures the variables of relative advantage, perceived trust, perceived benefits, and perceived compatibility concerning the intention to adopt fintech by *waqf* institutions in Malaysia.

As for fintech solutions in Islamic finance, a review of related literature shows that there has been a growing interest, in the last decade, in this area in academia. As a result, researchers have undertaken studies on various Islamic fintech. Among the subjects of a broader debate in this regard is the applicability of financial technology to Shariah principles and Shariah compliance (Oseni & Ali, 2019), the development of appropriate Shariah standards (Hasan et al., 2020), and the potential impact of fintech on the Islamic finance industry (Ali et al., 2019) Ali et al. (2019) establish that fintech has a substantial potential impact on the financial sector's performance. The impact, their findings indicate, is bi-dimensional – positive and negative.

This has created the necessity to conduct this study, on the one hand, from stakeholders to adopt best practices fintech solutions in *waqf* practice to drive efficiency in *waqf* transactions management, ranging from fund mobilisation, investment, and disbursement. Furthermore, the underlying technologies of industry 4.0 are a radical departure from the existing *waqf* fintech in use in that it not only can serve as a tool for *waqf* collection and as a mechanism to invest the funds and connect donors to fundraisers.

This study aims to fill a knowledge gap by eliciting the perspectives of *waqf* institutions involved in *waqf* management in Malaysia on the deployment of fintech related to Industry 4.0 to improve the collection and investment of cash *waqf*. In addition, it investigates if *waqf* collectors are aware of the possible usefulness of Industry 4.0-related technology developments as a holistic *waqf* management tool and their attitude toward their adoption for that purpose.

Despite its benefits, implementing fintech-driven cash *waqf* practises in Malaysia presents practitioners with several obstacles. For example, Haron et al. (2016) conducted a qualitative study on the obstacles that institutions engaged in cash *waqf* practice face. These challenges included collection, investment, and disbursement of the proceeds of invested cash *waqf* funds to the proper beneficiaries. Similarly, numerous studies have indicated that fraud and other financial manipulations are issues with cash *waqf* (Alma'amun et al., 2018; Suhaili & Palil, 2016). Additionally, the studies discovered that the patterns in cash *waqf* collection in Malaysia's various states are not steady. This fact is confirmed by Mokhtar et al. (2015), who also recognised collecting as one of the difficulties associated with cash *waqf* practice. Unfortunately, there is little research examining the use of fintech to improve cash *waqf* collection, in part because of a lack of a framework. Additionally, Saxena and Al-Tamimi (2017) state that the evolving technology landscape may demonstrate the increasing importance of IT in banking and financial services over time. For example, Internet of Things (IoT) technologies are beneficial for an organisation's data collection and processing stages. However, banks and financial organisations have not yet implemented big data analytics into their operations (Bholat, 2015).

This paper proposes a conceptual framework for cash *waqf* collection through fintech for Malaysian cash *waqf* organisations to bridge this gap. It aims to explain and better understand the five identified concepts or constructs in the proposed model in influencing *waqf* institutions' inclination to embrace fintech for cash *waqf* collection. This conceptual approach will assist and support Malaysian institutions that collect cash from *waqf*, State Islamic Religious Councils (SIRCs), and their subsidiaries in resolving administration challenges in cash *waqf* collection. This paper takes a qualitative approach by reviewing prior research on the current condition of cash *waqf* collection management and integrating related and pertinent literature to chart a new course through digitalisation. The study includes an introduction, a review of the literature, a proposed conceptual framework, a research methodology, a discussion of the findings and their implications, and a conclusion.

2. Literature Review

There is a substantial body of literature examining cash *waqf* collection in Malaysia and the possibility for digitalisation via fintech to optimise performance and outreach. A review of some bodies of this

literature reveals that existing studies have examined various concepts of cash *waqf*, adoption of technology, and the fourth industrial revolution.

Khan (2010) and Zakaria et al. (2012) connote *waqf* as a technical term in Islamic social finance, defining *waqf*, which interprets as Islamic endowment, as a privately-owned property whose corpus – the original capital of *waqf* - a charitable or religious cause is perpetually endowed with, while the revenue it generates is used for charity purpose. Building on this definition, Çizakça (2000) added that the legal implication of donating the property to *waqf* is that it ceases to be an object gift, inheritance, or sale; it becomes the exclusive property of Allah. Furthermore, Mohsin (2019) describe cash *waqf* as: "the confinement of an amount of money by a founder(s), (individuals, companies, institutions, corporations or organisations private or public), and the dedication of its usufruct in perpetuity to the welfare of society." Simply, cash *waqf* is *waqf* or Islamic endowment in the form of cash or fiat money.

Several studies examine the institutions responsible for cash *waqf* collection in Malaysia, such as the State Islamic Religious Councils (SIRCs) and their subsidiaries, to determine their overall cash *waqf* management performance. Others are concerned with the techniques of gathering and utilisation (Alma'amun et al., 2018; Hasan et al., 2020). For example, Muneeza et al. (2018) explore the functioning, limitations, and challenges associated with cash *waqf* management in Malaysia and the factors affecting the collecting and use of cash *waqf*. Among these difficulties are an insufficient collection network, a lack of transparency regarding usage, and a shortage of skilled employees with the necessary knowledge and ability to manage cash *waqf*. In terms of cash *waqf* collecting methods, the available literature indicates that several *waqf* institutions used a variety of collection strategies. Perbadanan Wakaf Selangor (PWS), for instance, adopted two methods: an online payment system as e-MAIS and through various *waqf* products ranging from Skim Infaq, the Gold *Waqf*, the Art *Waqf*, bank counter, and cash deposit system (Mokhtar et al., 2015; Saifuddin et al., 2014).

Industry 4.0, also known as the fourth industrial revolution, and its worldwide influence are gaining momentum due to heated debates about digitalisation, the Internet of things, and intelligent knowledge and systems (Friess & Ibanez, 2014; Vermesan et al., 2014, Zakariyah, et al., 2021). The argument is sparked by ambiguity regarding the optimal strategy for capitalising on the rapid speed of technology advancement to improve numerous facets of human life. In the era of information technology and open market operations, Schmitt (2015) affirmed three reasons why Industry 4.0 is vital and innovative. First, Industry 4.0 relieves manufacturers of present challenges by being more flexible and sensitive to business developments. These challenges increase market instability, shorter product lifecycles, more product complexity, and global supply networks. Innovative goods, for example, will improve the integration of the top floor and the shop floor, giving manufacturing greater intelligence and flexibility. Second, Industry 4.0 helps modern economies transition into more inventive ones, increasing productivity. The utilisation of current technology such as digital chains, intelligent systems, and the industrial Internet is expected to accelerate innovation by allowing new business models to be adopted much more quickly. Third, it emphasises the consumer's role as co-producers and places them at the heart of all operations.

Several studies conducted on the adoption of fintech in the area of Islamic finance and other sectors measuring awareness have given various definitions of the awareness variable in the Technology Acceptance Model (TAM) theory. For example, adding to a definition by Kotler et al. (2004) and Mansor et al. (2012), awareness is a constructed means of how customers come to know about a product or service and the extent to which they lack information about the said product or service. Jusoh (1999), on his part, sees awareness as knowing about the existence of a product offered, while Walters and Bergiel (1989) simply put it as the extent to which an individual is capable of associating a product or brand as an option for solving a problem while having just a little or no information at all about it.

From the preceding definitions of awareness given in the literature, we can infer that awareness has three essential elements: information, product or service, and user or adopter. The information element involves getting to know the existence of a product or service, especially a new one. The second element, a new product or service, is concerned with an innovation introduced to a target user or users, whereas the third relates to the individual – a person or an organisational user – for whom the service or product is designed. Given this, we can define awareness as a state in which the potential users of a relatively new product or

service are well-informed about introducing such a service and the benefits it could serve them. The knowledge of a product or service does not necessarily entail how to use it; it suffices to know that it could serve the target user. Knowing how to use innovation is entirely a different thing. Thus, the variable of awareness is referred to as awareness and knowledge; it is the initial stage of an innovation that is confined to exposing the existence of innovation.

Again, perceived ease of use is defined as how a user believes a system or technology requires less effort to operate (Davis et al., 1989). Perceived usefulness can be explained in this study by the degree to which a user believes that a particular system will directly affect his or her performance (Venkatesh & Davis, 2000). Previous research has shown that ease of use and perceived usefulness of a system benefit consumers' sentiments about that system (Hu et al., 2019; Rauniar et al., 2014). This situation could imply that when individuals find fintech goods and services beneficial and user-friendly, their perception of the technology improves. For example, Chuang et al. (2016) discovered that perceived ease of use and usefulness were strongly connected with consumers' attitudes about fintech products in Malaysia.

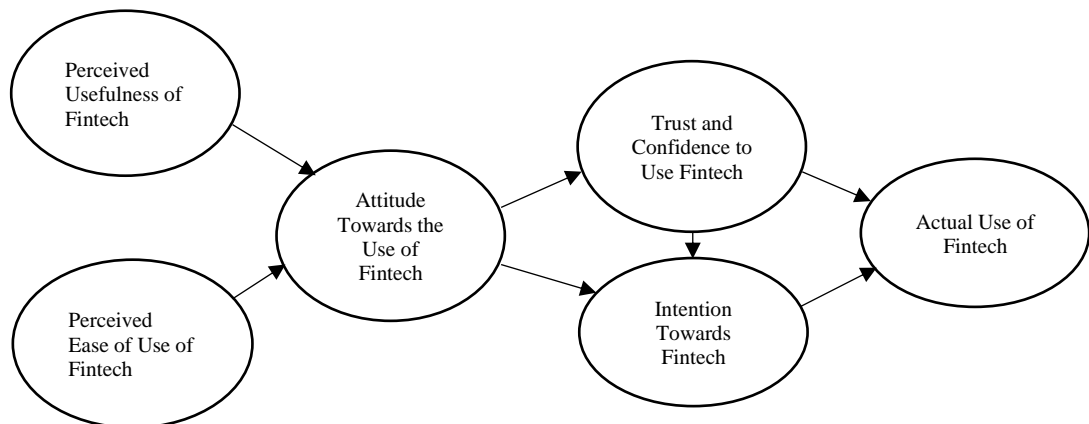
3. Research Methodology

This study adopts a qualitative method based on the review of previously relevant literature in *waqf*, fintech, Industry 4.0, and the technology acceptance model (TAM). In addition, secondary sources such as books, journal articles, and other published academic material were reviewed. The proposed model is based on a modified framework of Davis's technology acceptance model (TAM) method, which Wallace and Sheetz (2014) adopted in their study titled 'The Adoption of Software Measures: A Technology Acceptance Model (TAM) Perspective'. This study uses this model as a framework for measuring the application of fintech to improve *waqf* collection and performance in relation to the Industry 4.0 wave.

4. Proposed Conceptual Framework

This paper presents a conceptual framework (Figure 1) for expanding cash *waqf* collection and performance through fintech in response to the fourth industrial revolution wave study predicting computer technology adoption behaviour. The proposed model is based on a modified framework of Davis's technology acceptance model (TAM) method, which Wallace and Sheetz (2014) adopted in their study. The TAM has gained wide applications among researchers in behavioural sciences. The resultant effect of this modification of the TAM theory gives birth to the concepts of awareness of the usefulness and the ease of the use of fintech, attitude toward the use of fintech, which leads to confidence in the use of fintech, finally the actual adoption of fintech.

Figure1. The Conceptual Model (TAM)



Adoption concepts attempt to explain people's processes when deciding to perform an activity for the first time. The technology acceptance model (TAM) is a theory of information systems that were developed to make predictions regarding technology adoption (Rauniar et al., 2014). According to this model, when users are presented with new technology, various factors influence how and when to use it. TAM is based on the causal relationship between belief, attitude, intention, and behaviour as defined by the Theory of Reasoned Action (TRA) (Davis, 1989). Davis (1989) established the technology acceptance model (TAM) based on TRA. TAM attempts to explain why individuals choose to use a specific technology when accomplishing tasks such as collecting and managing cash *waqf*.

4.1 Enhancing Waqf Management through Fintech in Malaysia

Fintech (financial technology) is a broad term that refers to technological breakthroughs in finance in the financial services business. The phrase "fintech" refers to how companies can improve the process, delivery, and use of financial services by using technology (Mohamed & Ali, 2018; Salaudeen & Zakariyah, 2022). Payment channel systems, digital banking, online digital insurance, peer-to-peer lending (P2P), and crowdfunding are digital-based financial services developed in Malaysia. Fintech regulated in Malaysia concerning Implementation of Financial Technology explains that financial activities can be payment systems, market support, investment management, risk management, loans, financing, and capital provision (Kenton, 2021).

In Malaysia, academic studies focus on the mobilisation of cash *waqf* and enhancing its role as a mechanism for socio-economic development through the adoption of fintech abound. For example, a strand of Islamic fintech literature addresses the role of crowdfunding and its adoption in facilitating the collection and expansion of *waqf* funds (Alma'amun et al., 2018; Suhaili & Palil, 2016). Another strand involves integrating *waqf* crowdfunding into the blockchain (Mohsin & Muneeza, 2019). Apart from these online techniques of *waqf* collection, the traditional methods of salary deduction and bank standing instruction had been in use (Haron et al., 2016).

One of the crucial issues affecting *waqf* institutions in Malaysia is the cash *waqf* collection problem. As earlier pointed out (Kamaruddin et al., 2018), this is a result of the allegations of fraud and financial manipulations levelled against managers of some *waqf* institutions in the country. In addition, the lack of transparency and disclosure by *waqf* institutions also contributed to the collection problem. These concerns resulted in the irregularity of donations from most donors, or even their complete withdrawal, as their confidence in the management was eroded, and they could no longer trust the managers with their financial *waqf* contribution. Fintech is capable of offering effective solutions to all of these problems.

Blockchain is one of the most promising technologies with the ability to reduce corruption, provide fast and secure transactions and exchanges, and eventually assist in risk management within the global financial system. *Waqf* management process can also use blockchain, which provides a platform that allows different parties to communicate with *Waqf* managers. Finterra, a Malaysian financial firm, is currently employing blockchain technology for social crowdfunding to address challenges such as inadequate management, liquidity, and uncertainty associated with old *waqf* properties (Naoual, 2022).

Technology is also efficiently being used in *waqf* land registration process in Malaysia, making *waqf* indefeasible, valid, binding, and recognised (Ghazali et al., 2021). Asni et al. (2020) studied the *istibdal waqf* concept using a geographical information system (GIS) to benefit socio-economics and Muslim cemetery *waqf* management to establish whether it fulfils the criteria set for *istibdal* in Penang state. Komalasari (2020) studied a webbased system whose purpose was to create a complete and accurate database describing the actual conditions of the *waqf* cemetery land in different areas.

4.2 Fintech Awareness for Waqf

While other factors also impinge on the adoption decision of fintech, the awareness variable takes precedence in this regard over others. In other words, without knowing the existence of innovation, the motivation to seek more knowledge of its benefits is also non-existent; awareness of its existence precedes

the knowledge of its benefits and uses. So, the relationship between awareness and other variables measured in this investigation follows from awareness. Knowledge, or more specifically, innovation knowledge, go beyond being informed of the existence of an innovation (Noonpakdee, 2020). It entails consciousness and understanding of its functions and utilisation, which are gained by employing experienced and learning by the potential adopter (Davis, 1989). Knowledge, described by Davis as how-to-use, follows when the adopter has gained the awareness - knowledge of innovation, and he is motivated to know more about it.

Given the conceptualisation of the stages of innovation knowledge above, we can safely draw that the variables, innovation awareness and innovation knowledge, are not entirely different from each other, instead, they correspond to a different point on a continuum. They are all concerned about gaining innovative knowledge at various levels. Whereas in the adoptive process, awareness or awareness-knowledge is the first knowledge – the first stage of knowledge - regarding an innovation seeing the light of day; how-to-know is the second knowledge, and principles of knowledge constitute the third knowledge. So, the first knowledge triggers the need for the second knowledge into action, and the third follows from the second respectively, in that order.

4.3 *Perceived Usefulness and Ease of Use of Fintech for Cash Waqf*

Perceived utility and perceived ease of use both contribute to "attitude" to increase user's desire to adopt new technology, and it is vital to convince prospective users that the new technology is simple to use and that they will profit from it (Chau & Hu, 2002; Davis, 1986, 1989). "Perceived usefulness" meant that potential users believed the new technology would boost their job performance and would benefit them in the future (Moon & Kim, 2001; Venkatesh & Davis, 2000). The term "perceived ease of use" is related to how prospective consumers believed the new technology was simple (Moon & Kim, 2001; Venkatesh & Davis, 2000).

Both the "utility" and the "ease of use" of technology acceptance characteristics have a beneficial effect on "attitude". For instance, users perceive that the benefits provided by fintech Service are beneficial (e.g., they can accomplish their work responsibilities more quickly) and simple to use (e.g., they can get started without assistance), which contributes to users' positive attitudes toward fintech Service. Additionally, consumers' attitudes regarding fintech services are more favourable if they consider they are more useful for their work or are simple to use. Thus, consumers' acceptance of fintech Services is influenced by their perceived usefulness and ease of use.

4.4 *Attitude Towards the Use of Fintech*

Previous research shows that attitude is positively related to an individual's behavioural intention (Hsu & Lin, 2016; Venkatesh & Davis, 2000). This indicates that when a person has a positive experience with fintech products and services, their inclination to utilise them increases. For example, Chuang et al. (2016) found a favourable correlation between users' attitudes and their intent to adopt fintech goods in Taiwan. Similarly, Lee (2016) discovered that users' attitudes greatly influence their intentions to adopt Mobile Enterprise Applications (MEA). Additionally, Lee (2009) demonstrated that a consumer's mindset had a beneficial effect on their intention to utilise internet banking. Thus, the research above revealed a strong correlation between attitude and intention to use.

The majority of prior research has demonstrated that attitude has a strong positive effect on an individual's behavioural intention (Venkatesh & Davis, 2000). Subjective norms determine potential users' behavioural intentions while existing users' intentions are determined by their conduct and attitude. The association between a consumer's 'attitude toward using' and 'willingness to use' fintech Services should be highly positive. When consumers perceive positive reviews, they will believe that utilising fintech services is a positive experience and can boost their propensity. Additionally, when customers believe that fintech services are a convenient and practical tool, they will suggest them to others, affecting their attitude toward fintech services. As a result, attitude has a beneficial effect on behavioural intention to use.

4.5 Trust and Confidence toward Using Fintech for Waqf

Trust is based on the relationships between people and people, people and objects, or people and things. The three elements of trust are benevolence, honesty, and competence (Doney & Cannon, 1997). In addition, trust is perceived credibility and benevolence (Singh & Sirdeshmukh, 2000), which involves specific beliefs about inability, benevolence, integrity, and willingness to depend on another party. Trust has been conceptualised as confidence (Pavlou, 2003; Pavlou & Gefen, 2004). A trustor believes a trustee will meet the trustor's needs and confidence in a person or a group (Carnevale & Wechsler, 1992). The trusting party expects the party to be trusted will complete a particular action without monitoring or controlling (Mayer et al., 1995). A party to be trusted will not use deception to obtain benefits and trustworthiness. Moreover, Lee and Turban (2001) assumed that trust is a belief, expectancy, or feeling about certain items. Specific antecedents will increase or maintain the degree of trust that will affect the trust of both parties in the transaction.

Fintech services are still fairly unexplored; occasionally, users of fintech services must conduct a website search to locate the services. When the product's quality and key functions are unknown, the brand can assist buyers in making a choice (Ratnasingam, 2003). Enterprises can leverage their brand's reputation for stability, longevity, and trustworthiness to overcome consumers' trust issues. Enterprises' brand and service reputations positively affect consumers' trustworthiness (Veloutsou, 2007). Van der Heijden et al. (2003) proposed that cognition of trust and experiences when using new technology will directly affect a consumer's purchasing attitude. When consumers' brand and service trust is higher, the attitude toward purchasing is more positive. When consumers believe that the information provided by enterprises is honest, consumers will adopt a positive attitude toward this enterprise. Thus, "brand and service trust" is defined in this study as "the extent to which a company's reputation, website quality, and system security influence consumers' behavioural intention to use fintech Services."

5. Expected result

The prospected research is expected to emphasise the significance of aspects (e.g., perceived ease of use, competitive advantage, perceived utility, and behavioural attitude toward fintech) that may influence customers' perceptions of fintech products and services. Additionally, this study may benefit future scholars and policymakers in *waqf* working in the fintech space. This research will highlight critical areas that the Malaysian government and fintech enterprises must explore and improve in terms of managerial implications. For instance, the development and upgrading of information technology infrastructure should be prioritised to increase user adoption of fintech goods and services. Nonetheless, the attempt to increase consumer adoption of fintech products and services may also prompt policymakers to enact applicable legislation (e.g., security, privacy, etc.). Theoretically, this study will add to the existing body of knowledge by establishing a knowledge base for fintech research in Malaysia.

6. Conclusion

To conclude, this paper proposes a conceptual framework for the adoption of fintech to enhance and expand cash *waqf* collection in Malaysia in response to the Fourth Industrial Revolution (Industry 4.0). The model seeks to propose measurement for the independent variable of finTech awareness and knowledge, ease and usefulness of fintech, attitude towards Fintech and finally, trust and confidence toward the adoption of fintech. The proposed model is based on a modified framework of Davis's technology acceptance model (TAM) method, which Wallace and Sheetz (2014) adopted in their study.

This preliminary study aims to understand consumers' behaviour towards fintech products and services by adopting Technology Acceptance Model (TAM). FinTech remains a new phenomenon in the financial ecosystem worth exploring by many researchers precisely when addressing the consumers' perception of fintech products or services. With the development of financial services, advancement of information technologies, and evolution of financial sectors, fintech has become a new opportunity in the financial

industry. This platform is expected to attract the interest of the regulator body, servicing industry, and products services to understand consumer behaviour to gain a distinct competitive advantage, enhancing consumer behaviour comprehension towards fintech products and services. This study will serve as a valuable guide and provide future research insights to explore this avenue further.

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Conflict of interest statement

The authors agree that this research was conducted without any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

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Authors' contributions

Habeebullah Zakariyah carried out and wrote the research, and Adnan Opeyemi conceptualized the model and wrote the literature review. Both Anwar Hasan Abdullah Othman Romzie Rosman designed, supervised and approved the research for submission and finally, Adnan Opeyemi Salaudeen revised the manuscript.



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