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Potentials of artificial intelligence in digital marketing and financial technology for small and medium enterprises

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ABSTRACT

Small and medium enterprises small and medium enterprises (SMEs) play a crucial role in nations' economy, through job creations, reducing unemployment rate as well as increase the overall productivity and gross domestic product (GDP) of a country. However, most SMEs are often lagging in technology adoption which could be a game changer for their success. SMEs could adopt new technologies to improve their business operations and profitability. They are also useful in supporting SMEs to penetrate international market. This research suggests that implementation of the artificial intelligence (AI) through digital marketing (DM) and financial technology (Fintech) would assist SMEs to be competitive, current in leveraging on technology and increase their overall profitability. Based on secondary data analysis, this paper presents a conceptual framework of determining factors in adoption of AI through digital marketing and Fintech. It contributes to the academic knowledge of AI, DM and Fintech for small businesses, and presents a testable framework that can be replicated and adapted for future empirical study.

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1. INTRODUCTION

Small and medium enterprises (SMEs) have a significant role in gross domestic product (GDP) growth and job creation. A considerable amount of research shows that this is true for emerging markets as well as some stagnant and negative growth in the developed countries [1]–[3]. However, as SMEs often market substitute products or services into the markets, the ability to make use of marketing strategy to gain competitive advantages can be a key determinant for their success. Marketing could be the best tool in maximizing business performance [4]. In the era of digitization and technological innovation, marketing is evolving rapidly. Hence, a plethora of digital marketing technologies and strategies are, at present days, available for SMEs.

Digital marketing has become a buzz term, but only few people are able to properly articulate it is value or understand how digital marketing techniques could yield the best results. Chaffey and Ellis-Chadwick [5] defined digital marketing as "the application of digital media, data, and technology integrated with traditional communication to achieve marketing objectives. Digital marketing includes all marketing methods that make use the internet or an electronic device to launch, promote and sell services or products. Many industries took advantages offered by the internet channels in their marketing strategies [6]. Understanding the importance of

digitization and technological innovation in enterprises' upward growth, this paper scrutinized literatures about the adoption of artificial intelligence (AI) in digital marketing (DM) and Fintech to facilitate growth for SMEs. A conceptual framework and interpretations are as well provided in the paper.

The digital era has provided consumers with the ability to express themselves and voice their opinions while also providing them with the power of choice and control. Customers can engage with brands in a dynamic way, and users can easily search for information, products, and services via online platforms [7]. Digital marketing has given the aptitude to businesses to optimize their sales, broaden their market coverage and maintain customers-relationship virtually. Consumers and companies have been both benefited from digital marketing.

The players in digital marketing industry are able to modify SME communication content to be more user-friendly and human-centric due to it is ability to personalized to target market. Users can post contents, such as their feedback and personal opinion about certain brand or product or service, in which they could influence on consumers' perception and purchase decision. In the digital era, many factors, including contents, interface, reviews, comments, images, and internet-speed, influence users' experience and positive attitude. Users are more likely to respond positively to brands that are succeeded in creating a customer-oriented environment. By engaging the right concepts of user profiles, target audiences, and customer behavior, through digital marketing, enterprises could achieve optimal sales, high-quality services, and a positive users' experience [8].

Since the term "Digital Marketing" was introduced in year 1988, there has been a dramatic growth in the business world, including that of start-ups to those experienced by foremost companies all over the world. Digital marketing underwent a period of transformation due to technical development in the AI, that led from a data-driven approach to a modern approach focused on both knowledge and data [9]. Firms in the emerging world have recognized the value of digital marketing. Businesses would have to integrate digitalization in their conventional approaches to meet their customers' needs accurately [10]. The introduction of a new digital technology has provided new business opportunities for advertisers which utilise online advertisement in achieving their marketing goals [11]. Online advertisement is an effective marketing tool for building brands' popularity and increasing traffic [12]. Digital media is more cost-effective as it maximizes the return on investment (ROI) in terms of generating outcomes and measuring effectiveness per amount of money invested [13]. Digital marketing has aided and, in most cases, have replaced traditional advertisement and marketing strategies for enterprises. Furthermore, it has a potential to help the nation's economy to flourish and provide useful resources for governments to operate more efficiently [14].

AI is a machinery intelligence achieved via a set of computational procedures that allow machines to perform acts, like those performed by humans. Human intelligence is demonstrated by learning and communication. Both approaches require mental skills, such as synthesis, decision-making, judgment, analysis, reasoning, hypothesis, organizing, and interpretation [15]. AI, in the other hand, is a new technology that can understand, learn and act in response to data. Examples of AI in use today include chatbots, digital assistants, and machine learning [16]. The amount of data produced by humans and machines are exceeded humans' capability to understand and make complex decisions based on that data [17]. AI helps in solving this problem. The prompt growth of AI, combined with platform-based business models, cloud-based resources and connectivity would result to integrated and automated business processes that are beneficial to consumers and other stakeholders [18]. The process of integrating AI into an organization, as well as the acceptance and use of AI by the society, is known as the AI adoption [19]. However, organizations face various obstacles in their adoption journeys. Knowing the extent to which AI has been implemented by businesses in their different tasks, as well as the determinants and obstacles to AI adoption, would be helpful for relevant stakeholders. The use of AI is growing, and there has been a substantial increase in cost savings and revenue, especially among AI users from various business activities. Many digital marketers are using AI to produce a valuable customer's insights from the big data flow.

According to Wigglesworth [20], financial technology (Fintech) is one of the most important investments among most competitive finance companies. The term of Fintech stands for Fintech, which referred to a distinct, emerging technological concept that primarily represents application of Fintech across a broad variety of business to day-to-day activities. It focuses on automating the practice and improving efficiency of financial service through integration of information technology (IT) [21]. Many people around the world are still financially excluded. According to the United Nations, about 3 billion people worldwide are lack of access to financial resources, such as insurance coverage, bank accounts, and credit entitlements offered by financial institutions [22]. Fintech aims to offer financial access to all levels of society. Interestingly, it has always been a critical success factor in SMEs, especially in Malaysia [23]. In addition, Fintech is an important element that helps SMEs' transformation toward a more sustainable business model leading to an increase in its profitability [24].

In developing countries, SMEs play a crucial role in nations' economic growth. However, many SMEs have not kept up with the latest technological development. This has caused a dramatic decline in SMEs' performance. There is a need for SMEs to adopt new technologies in order to succeed and increase their profit. New technologies, like AI, digital marketing, and Fintech, are among the most recommended, for SMEs in enhancing their efficiency in both performance and decision-making process. In addition, the recent study of Pizzi *et al.* [24] have found that Fintech could be the key to a more sustainable business model, particularly integration of circular economy in SMEs' business practices. Unfortunately, there are still lacking in researches identifying facilitating factors, on how SMEs can succeed such a technological transition, especially adoption of AI in digital marketing and Fintech.

The development of new digital technologies provides business entities with an environment where opportunities to market their products are at the forefront. Many leading businesses realized the potential of digital platforms that encourage them to invest in digital marketing strategies. These platforms are among the most valuable companies in the world, with the number of users reaching from millions to billions [25].

Businesses get a large amount of data from the digital marketing process. Dealing with the huge data producing daily has become increasingly difficult. As a result, new technologies must evolve within companies to better classify, optimize, target, and analyses audiences [26]. AI may be used in a combination with marketing as it takes advantages of producing highly accurate results in user data classification, content enhancement, profiling, predictive models, targeted augmented audience and search engine optimization.

In the body of knowledge, scientific research regarding AI could collaborate with marketing studies in many ways. Just a small percentage of scientific research on AI is currently focused on specific digital marketing techniques. The majority of scientific research focuses on broad topics, including customer behavior, e-business, search engines, and consumer predictive modeling, rather than being more focused on marketing problems that the businesses are more aware of, such as conversion optimization, social media user behavior, social media marketing, targeted advertisements, online purchasing predictive models, chatbots, and so on [6]. In spite of the extensive research and numerous publications, scientific publications concerning digital marketing and AI are apparently still lacking [27]. In term of integration with the Fintech, AI has created a huge challenge in the implementation process, due to the distinctive demands and the complex integrated systems. For this reason, precise and up-to-date knowledge of Fintech is in high demand among both academics and professionals [22].

Based on aforementioned research gaps, this study aims to provide a conceptual framework related to adoption of the AI in digital marking and Fintech for improving SMEs' performance. The framework will be a great contribution in the academic body of knowledge, particularly that about AI, digital marketing and Fintech. This study is particularly important in Malaysia, where SMEs are faced with high rates of business failure and vulnerable sustainability due to a lack of innovation. It will assist in creating awareness about the importance of AI integration in digital marketing and Fintech for SMEs' upward growth and sustainability. Besides, the content of this study will be a reference for future study on the adoption, practices and development of AI, digital marketing and Fintech.

2. METHOD

The exploratory research is designed to allow an investigator to dive into a collection of relevant literatures, with the aim to develop suggestive ideas pertaining certain phenomenon [28]. There are many methods of data collection, which are categorized into two major classifications of quantitative and qualitative methods [29], [30]. As this research is a review, it adopted a qualitative, descriptive method. Preferred reporting items for systematic reviews and meta-analysis (PRISMA) approach is used for reporting research papers screened and analyzed in this review study. The secondary data and information were collected from different articles published in different journals, periodicals, conference papers, working paper scholars and researchers and published e-books, gathered via Scopus, Science Citation Index Expanded (SCIE), Research Papers in Economics (RePec), Social Sciences Citation Index (SSCI), Web of Science (WoS) and Google Scholar. Many keywords were used to find the literature such as: AI adoption for DM, AI adoption for Fintech, and Barriers of AI adoption in organizations.

Initially, 18 papers, published from year 1971 to 2021, were obtained from Scopus. The 18 papers were, later on, supplemented with additional of 12 papers, obtained via the SCIE. The selection of the sources was based on three main subjects of AI, DM and Fintech, and then, further filtered with sub-keywords of adoption-intention and Malaysian SMEs. Only English papers were retained and any duplication was, then removed. The first screening process was performed based on their abstracts. Fifty-five percent of the sources was retained for further eligibility screening based on their full texts or contents. Ultimately, this conceptual study utilized literature analysis of 65 related sources, from year 1971 to year 2021. Among the final references, the top five sources are Scopus (18 papers), RePec (10 papers), SCIE (12 papers), SSCI (8 papers) and WoS (6 papers). In this study the top 5 databases were listed, while the total used databases were 10 in total.

However, it is important to note that the number of papers presented does not represent the total number of studies that used in this research. That is happens because of the overlapping, to illustrate one study classified in both Scopus and RePec, this necessitates its inclusion in both numbers 18 and 10.

3. RESULTS AND DISCUSSION

SMEs' decisions to adopt the AI through digital marketing and Fintech would depend greatly on perceived benefits and perceived barriers by the enterprises regarding the adoption. Selection of perceived benefits of AI adoption, assessed by SMEs, was based on concepts of the theory of acceptance model (TAM). TAM was developed from the theory of reasoned action by Ajzen [31], which explained on why a person behaved in a certain way. TAM applies psychological factors in understanding user's attitude towards a technological adoption [32]. They are two basic perceptions in the TAM, namely that perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness is defined as a user's perception about the utilities of the technology in increasing overall performance of an organization, whereby perceived ease of use refers to user's perception that the technological operation is effortless [33]. Underlying on those two basic principles of TAM, perceived benefits encompassed in this study, can be categorized into two groups, as presented in the Table 1.

In addition, perceived risks are equally important to balance out the two sided-coin of costs and benefits analysis in a technological adoption. According to Holak and Lehmann [34], when a person made a decision, he or she must have assessed perceived risk of the action. Interestingly, perceived risk was found as an inhibitor in making a decision regarding the technological adoption [35]. It negatively influences user's acceptance of technological adoption because higher risk would simply translate into uncertainty and unpleasant user's experience [33]. Correspondingly, relevant perceived risks were also identified related to AI adoption. They were expensive purchase price, lack of top management support, employees' inexperience and resistance to change. In this conceptual study, all of those perceived risks mentioned are labelled as perceived barriers in the AI adoption.

Table 1. Perceived benefits of AI adoption

TAM	Perceived usefulness (PU)	Perceived ease of use (PEOU)
Perceived usefulness of AI for digital marketing	– Deliver content that resonates with the audience. – Smart Advertisement – Reducing Cost	– Better Customer service throughout Chatbots – Conversion optimization
Perceived usefulness of AI for Fintech	– Fraud Prevention – Predictive Analytic	– Accurate decision Making – Better Wealth Management

3.1. Perceived usefulness of AI for digital marketing and Fintech

There are nine perceived usefulness's related to AI adoption in both digital marketing and Fintech. Each of the perceived usefulness's are elaborated in this section. Content marketing can be defined as a "strategic marketing approach focused on creating and distributing valuable, relevant, and consistent content to attract and retain a clearly-defined audience and, ultimately, to drive profitable customer action" [36]. The concept of content marketing has taken a place in the heart of digitally supported marketing approaches. Content marketing is a great way to market SMEs' products or services and it is highly connected with the latest technologies, such as the AI [37]. Integrated AI is often used for dividing the related content marketing scenario into some content elements and forming a general adaptive scenario that is updated real-time according to feedbacks from customers.

Machine learning which is a subfield of AI plays a major role in targeted advertisements and real-time bidding via optimized advertising models. It tests criteria which permit to evaluate the significance of various factors on probabilities of clicks and conversions. Machine learning uses available data to build regression models that offer new information and hidden trends [38]–[40].

Chatbot is abbreviation for a chatting robot. It is a communication simulating program that accommodates real-time chat with users. The conversation with a Chatbot is very simple. Chatbot uses AI to answer questions inquired by the user [41]. It can be analyzed, improved and further tailored in various fields, such as education, business, and online chatting. According to Johannsen *et al.* [42], chatbot is a solution for SMEs to support their online customer service, the internal helpdesk, the sales conversation, as well as the customer engagement in the marketing process.

Although cost of the AI adoption is relatively high, its efficiency could significantly reduce the marketing cost. By integrating AI in digital marketing, marketers would easily obtain relevant data for making a right marketing decision. It not only reduces marketing cost but also helps in achieving organization's marketing objectives [43].

Conversion rate optimization (CRO) means creating an e-commerce website that allows as many users as possible to take a specific action, for example requesting a contact, registering for an account, making a purchase, or clicking on any other link in the website, email, or mobile, desktop, or social media application [44], [45]. Integrating AI in a conversation rate will assist in determining which elements work better in the webpages, and so improve its overall performance. Firstly, a webpage is designed and users are directed to it for measuring how well it converts. "If the conversion rates are statistically significantly different, the better design is adopted" [46].

AI has made its way into boardrooms and has the potential to change corporate decision-making forever. According to Nayak and Dhanaraj [47], the usage of AI application in strategic decisions has heterogenic impact on the pace and accuracy of decision. In particular, where the delegation is the key movement for the decision-making, using AI to enhance human decision-makers leads to quicker and higher performing choices. Replacing heuristics with methods for simplification of problems will lead to slower and unfavorably impact on the perceived decision [47]. Marketers rely on their instincts and expertise to make the most practical decision based on massive data, charts, statistics, and taste. Therefore, the decision-making process is so complex and highly subjected to human error. AI appears to be proficient in solving the puzzle, especially on how to process huge data and make a low-risk decision in a short period of time [6].

Application to detect fraud is made primarily by the artificial neural network (ANN) in the sense of supervised categorization. It can recognize features fast and perform prediction accurately [48], [49]. Fraud is detected using genetic algorithms and clients' behaviors. bootstrapped optimistic algorithm for tree construction (BOAT) is an example of an effective financial fraud detection method which is adaptable to behavioral changes by merging categorization and clustering procedures [48].

Many approaches to artificial intelligence depend on machine learning, which is empirical at its nature. It has been used for decades and is often referred to as "predictive analytics" [50]. Big data and predictive analytics assist companies in price minimization, speeding up product development, and generating new goods or services to satisfy the changing demands of consumers [51]–[55]. Furthermore, multiple studies discussed that by utilizing big data analytics or big data predictive analytics, companies would be able to make more strategic choices in the market [56], [57].

AI took place in all aspects of human lives. There has been significant development in the fields of pattern recognition, the application of algorithms for self-learning, and modern data processing. Technological innovation assists in handling rapid growth of financial data volumes, providing smart consulting solution for investors and planning for future data opportunities [58]. A robot consultant is an example of how AI performs wealth management; it offers automatic wealth management recommendations based on algorithms without using human financial advisors [58].

3.2. Barriers in AI adoption process

While AI can help organizations in solving many problems, implementing AI successfully is not guaranteed [59]. Barriers affect the overall success of the implementation of innovative solutions. They can be rules, objects, laws, problems, ideas, systems, structures, individuals, or practices that "inhibit, discourage, or prevent technology advancements" [60]. In this paper, four barriers were selected as determining factors that negatively impact on AI-adoption intention. They are the expensive purchase price, lack of top management support, employee inexperience and change resistance [19].

AI implementation requires huge changes in business practices, including a major cultural change. Introducing new technologies into an organization requires changing organizational culture [61]. There are disparities in how bigger businesses process a technology transition as compared to small and medium-sized companies. In the transition to AI, the key differences between SMEs and larger organizations are funds, organizational skills, and operational aptitudes [61]–[64]. According to Rauch *et al.* [61], SMEs must create a more tailored plan to execute AI effectively.

Besides, it is important for SMEs not to fall behind. For doing so, they must confront the difficulties that come with the AI transformation. The obstacles are also linked to unique needs of each organization resulting to different organizational challenges. The key problem is that small and medium-sized enterprises frequently lack of skills and expertise in adopting new technology, making them to have less impact as compared to larger businesses [61]. Furthermore, Rauch *et al.* [61] concluded that it was necessary to be aware that AI required not just technological expertise but also management expertise. The absence of management support may be the biggest obstacle for AI adoption in SMEs reflecting it is significant impact [62]. Furthermore, funding issue is one of frequent problems encountered by the SMEs. National policy initiatives and legislative mechanisms have studied the possibilities in adoption of new technologies, like AI for SMEs in recent years, but funding continues to be one of the biggest challenges identified, particularly those observed among entrepreneurs [65].

Table 2 illustrates the previous research, based on them, a conceptual framework, depicted as Figure 1, is suggested for the adoption of AI through digital marketing and Fintech. This proposed framework

informs on determining factors that would positively and negatively impact on the adoption of AI among SMEs. Those factors are categorized into two groups of perceived usefulness's of using AI in digital marketing and Fintech, as well as perceived barriers of AI adoption.

Table 2. Previous research about AI perceived usefulness's and barriers for DM and Fintech

Author	AI Perceived usefulness's for DM					AI Perceived usefulness's for Fintech				AI Perceived Barriers			
	PU1	PU2	PU3	PU4	PU5	PU6	PU7	PU8	PU9	PB1	PB2	PB3	PB4
Gkikas and Theodoridis (2019) [6]						✓							
Insitute (2016) [36]	✓												
Kose and Sert (2016) [37]	✓												
Mahdian and Tomak (2008) [38]		✓											
Spentzouris *et al.* (2018) [39]		✓											
Zhang *et al.* (2014) [40]		✓											
Dahiya (2017) [41]			✓										
Johannsen *et al.* (2017) [42]			✓										
Shahid and Li (2019) [43]				✓									
Ash *et al.* (2012) [44]					✓								
Saleh and Shukairy (2010) [45]					✓								
Miikkulainen *et al.* (2018) [46]					✓								
Nayak and Dhanaraj (2020) [47]						✓							
RamaKalyani and UmaDevi (2012) [48]							✓						
Russell and Norvig (2005) [49]							✓						
Siegel (2016) [50]								✓					
Choi *et al.* (2018) [51]								✓					
Dubey *et al.* (2019) [52]								✓					
George *et al.* (2014) [53]								✓					
Ghasemaghaei and Calic (2019) [54]								✓					
Giannakis and Louis (2016) [55]								✓					
Chen *et al.* (2015) [56]								✓					
Wamba *et al.* (2015) [57]								✓					
Dapp and Buechner (2016). [58]									✓				
Bérubé *et al.* (2021) [61]										✓		✓	
Brock and Wangenheim (2019) [62]										✓	✓		✓
Kim *et al.* (2008) [63]										✓			
Radziwon *et al.* (2014) [64]										✓			
Zhao (2008) [65]										✓			

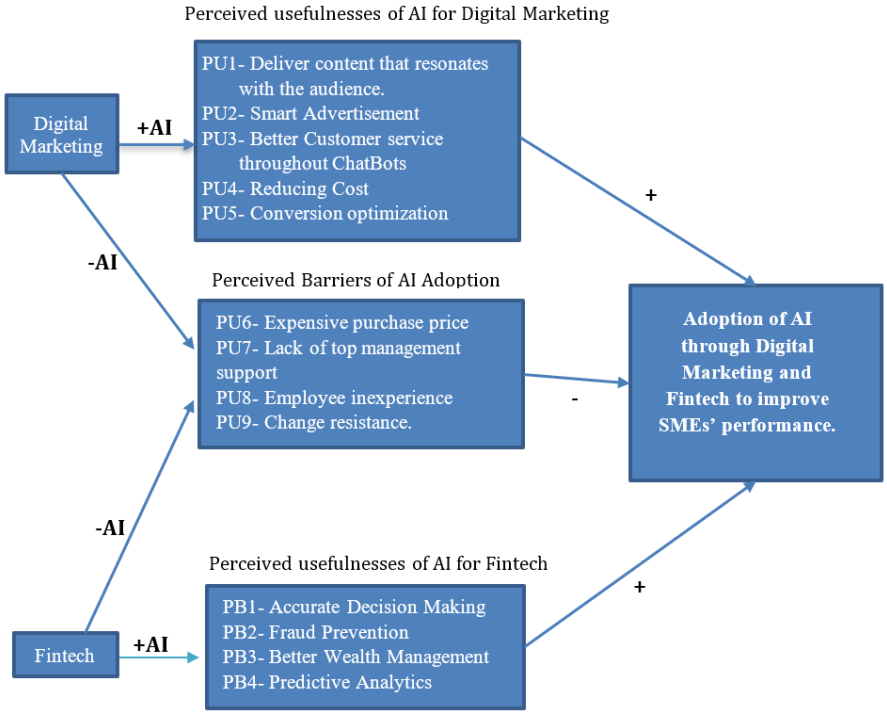

Figure 1. Conceptual framework for adoption of AI through digital marketing and Fintech to improve SMEs' performance

4. CONCLUSION

Based on this literature review, this paper provides a conceptual framework that helps SMEs in the implementation of AI through digital marketing and Fintech. The framework shows that AI could help SMEs in many ways, like advertising, customer service, content writing, conversion optimization, predictive analysis, decision making, wealth management, and fraud prevention. However, there are some barriers that SMEs need to overcome in order to adopt AI successfully. The barriers are related to trust, security, price, management support and technical competencies. For overcoming these barriers, the government should deliver many digital sessions to increase the awareness level about AI applications. Then, this will increase SMEs' trust towards AI technologies. Moreover, an expansion of funding is needed to do more research on security enhancing for AI application. Accelerator programs could be another viable solution in increasing technical competencies and/or connecting SMEs with possible investors for raising required amount of financial assistance.

Further study is needed as it will further complete this study by finding more about AI applications and examining their impact on digital marketing and Fintech. As this paper is conceptual in its nature, future study could empirically test the framework proposed, via confirmatory research. Comparative study between two or more nations and regions; or developed and developing economies, would also be useful in identifying distinguishing factors that influence the adoption of AI and Fintech by SMEs across different countries and regions. The conceptual framework presented in this paper outlines the potential usefulness's of AI integration for SMEs. However, one of the limitations was that it does not extensively account for the potential variations in the applicability and impact of AI solutions based on industry type. Therefore, further research is needed to account for Fintech and AI requirement specificity according to industry types.

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