

INTEGRATION OF ISLAMIC FINANCE, DIGITAL MARKETING, AND ARTIFICIAL INTELLIGENCE: FINANCIAL RISK AND INVESTMENT MANAGEMENT

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ABSTRACT

This research addresses the issue of the unintegrated system between the digital marketing, artificial intelligence, and Islamic finance with financial risk management. Although financial services are being digitized rapidly, the current methods are not holistic and lack the explanations of the marketing tools in enhancing the reduction of risks within the framework of Shariah. The purpose of the research is to construct and empirically estimate a model that will assess the effect of digital marketing and AI on financial performance and investment decision-making in Islamic banks. The approach is a mixture of PESTEL analysis and panel regression model, and the Digital Marketing Performance Index (DMPI) is a compound measure of digital activity. The findings indicate that technological ($\beta=0.45$), legal ($\beta=0.25$), and DMPI ($\beta=0.50$) variables positively affect the return on investment and customer engagement the most. Digital marketing incorporation and AI result in an 8-12% ROI increase and enhances customer interaction. The research finds that digital marketing can be regarded as a strategic risk management tool, and not a mere communication tool, which helps to increase transparency, trust, and sustainability in Islamic financial institutions.

Keywords: *Islamic Finance, Digital Marketing, Financial Risk Management, PESTEL Analysis*

1. INTRODUCTION

The Islamic finance has become one of the fastest growing fields in the global financial arena over the last two decades. Nevertheless, even with this fast development, there is a critical issue of the Islamic financial institutions: the absence of integrated mechanisms to link digital marketing operations with financial risk management. The result is inefficiencies in investment decision making, decreased transparency and reputational and compliance risks. This is especially relevant in the context of Islamic finance where transparency, ethical communication, and trust are necessary at a high level due to the fact that Shariah principles are followed. Any discrepancy in online communication can have a direct impact on economic sustainability and consumer trust. Nevertheless, regardless of the fast development of Islamic finance, one significant issue is not properly considered the lack of the complex approach to connect digital marketing, artificial intelligence, and financial risk management. The result of this gap is ineffective investment decision-making, a decrease in

transparency, as well as exposure to reputational and compliance risks. The significance of this question is connected with the peculiarities of the Islamic finance which is founded on the strict Shariah principles, which demand transparency, moral communication, and trust. Here, any discrepancy in digital marketing or abuse of analytical technologies may translate directly into customer trust and credibility of the institution. Thus, the fact that digital marketing and risk management are not integrated depicts both a technological challenge and a strategy and ethical issue that needs to be addressed immediately. The increase in Shariah compliant assets and distribution of banking products in the Islamic finance services beyond the Middle East is a testament to a new constituency in the world which is interested in ethical finance, transparency and accountability. In this respect, the necessity to develop the model of risk management and to increase the efficiency of the Islamic financial institutions has gained significant popularity. According to the literature review, there is a significant knowledge gap on the role digital

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marketing can play in financial risk management, and this restricts the capacity of Islamic banks to create effective and compliant digital strategies. Some other studies address the topic of digitalization and consumer behavior [1, 2] or the application of analytics technologies to reduce risks [3] but these issues are still remote in the literature. Moreover, the articles do not introduce some aspects of the Islamic financial regulation and cross-national differences. The study aims at investigating how digital marketing and analytics technology can influence the financial risk management and investment decision making in Islamic finance. Primary data based on annual reports and statistics of the Islamic banks are utilized and PESTEL analysis has been applied to examine the political, economic, social, technological, environmental and legal conditions that determine the effectiveness of the digital strategies.

The findings underscore the relevant external and internal forces that facilitate an effective implementation of digital marketing and predictive analytics tools in Islamic banking that result into risk management and consumer trust. The research bridges a gap in the literature and offers useful information to the practitioners, funds and regulators in the Islamic banking industry intending to implement digital transformation strategies. The main hypothesis of this study is that when digital marketing, artificial intelligence, and macro-environmental factors (PESTEL) are integrated into a single system, they will produce an enhanced financial risk management and investment efficiency within the Islamic banks. The study targets big Islamic banks that have publicly available information and excludes small financial institutions and micro-level customer behaviour. It only analyses the macro-environmental factors but not the processes that occur in an organization.

2. LITERATURE REVIEW

Islamic finance as a product of the global financial system is one among other sectors that are most dynamic, growth-oriented, and market resilient based on principles that are fundamentally different with those in conventional counterpart. Based on Shariah law, the ISL does not allow survey or usury - *riba*, *gharar* (excessive uncertainty), and *maysir* (gambling) - but promotes risk sharing, transparency and ethical investment [4]. These taboos are not only what to refrain from doing but a system of *dos* and *don'ts* which is meant to guarantee justice, socio-economic well-being, and sustainable development. According to [5,6,7], Shariah principles convert

finances into an instrument of sustainable development, a stage in which financial benefit does not only correlate with social responsibility but also moral responsibility is garnished. In *musharakah*, all involved partners equally put their money in a business; also profits as well as losses are being shared without any discrimination on the proportion they so decide upon mutually [8,9]. These structures can represent a form of governance which enables rewards for behaving ethically to be aligned with taking risk, thereby ensuring that financial transactions are those with no element of speculation or free-riding. Islamic finance has evolved in the last 20 years due to increasing global demand for transparent, responsible and ethical financial products. Islamic instruments appeal to not only Muslim investors, but also non-Muslim investors who now see Islamic financial institutions as ethical and socially responsible substitutes [10]. The trend has forced the Islamic financial institutions to embrace contemporary marketing practices, sophisticated information technology and risk control, to cater to the similar world models to conform to the religious ethics. It does not harmonize its regulation and Cross boarder may had conflicts which not good standards; it is also known that financial professionals are not *stretto* men which have to be multi-disciplinary at least the Islamic Law ask [11] them to stretch finance into Computer Sciences. It is imperative to strike the balance between technological isolation and ethical disciplines and has therefore played a major role in Islamic finance. Such type of technological advancement in the globe that Shariah was expected to be King can render our economies robust and open and need not necessarily result in erosion of what we are as believers in religion. It is the need to commercialize that balance that renders Islamic finance a research topic in the convergence points where innovation, digitalization and ethic sound management of financial resources converge. The digital marketing has transformed the language between the financial service providers and the users. In the case of Islamic finance, though, it is an opportunity - and a task: to further expand its market penetration and to gain trust by practicing genuine ethical intermediation. There is increased use of digital marketing tools such as social media, mobile applications and contentment ripple-based communication platform in the Islamic banking industry [12, 13]. These channels not only reduce the cost of marketing, and expand the scope to new untapped waters, but also provide a more face to face communication, and a comprehension of the interactions with the clients. The brand name of

Islamic financial product is the most empirically significant in the levels of public trust and differentiation [14]. To the faith-marketing consumer - to me who would like to think that my brands and products shopping is on course with my values, an online presence is an obvious sign of due diligence, credibility, social responsibility; form of best business practices. What is meant is that digital marketing is a platform where trust can be built and nurtured. However, as the dependency on digital platforms is growing, new types of risks arise. Any feelings of miscommunication through the digital media, cultural insensitivity and any breach of the Shariah norms may be substituted with reputational crises and churn effect. As provided by [15] and [16] digital marketing influences behavior of an individual where institutional legitimacy is strengthened or weakened. Conversely, not focusing on this role can overestimate misinformation/disbelief - particularly during a time of instantaneous response via the internet. It was also discovered by [17] that digitalization positively influences the transparency and growth of client base within the Islamic banks. However, majority of studies fail to associate this change with the broader view of risk control. Marketing and the connection to the governance views are overrepresented, and there is a scarcity of research concerning the communication of the risk marketing or customer perception. This is the reason why literature remains disintegrated, rather than integrated. To eradicate this disjuncture, it is better to view digital marketing as a subset of a holistic model that connects trust, compliance and strategic sustainability in Islamic banking. The big-data analytics and the artificial intelligence (AI) disrupt the existing way of carrying out finance. Machine learning models are now capable of credit-risk scoring, detecting fraud as well as predicting investment trends, which are beyond the capacity of the human counterparts [18,19]. This is the same potential with AI in Islamic finance - but the adoption is tentative and patchy. Islamic banks can consider using analytic algorithms to find a trustworthy borrower to ensure a liquidity position as well as to optimize the portfolio without speculative instruments so that no Shariah principles are violated [20]. AI is also capable of improving effectiveness in such processes as automated compliance controls, customer onboarding and audit trails. There are exceptions but in the overall it is evident that technology has more potential operationally than marketing or strategy. These gaps in discourse cause an increased gap between the maturity of technology and moral responsibility as [21] AI ethics and religion are a rarity. An idea such

as a halal algorithm - something fair, explainable and minorities-neutral - is still a far-fetched one. In such a way, the adoption of AI is not only about the technical efficiency: it is a religious appropriation. The algorithms should meet the protocols of value of fathanah (responsibility) and amanah (trustworthiness). These procedures must bow down to shiddiq (honesty) system itself [22]. Religion and moral regulation It can destroy confidence in Islamic finance, as this would be contrary to the fundamental principles of Islamic finance [23]. Through the combination of marketing data to predictive analytics, Islamic banks are able to foresee risk profile, anticipate early warnings as well as construct Shariah-compliant investment strategy. However, that opportunity of interdisciplinarity has been mostly squandered. The other weakness is that there are no empirical studies in developing countries where cultural and regulatory diversity significantly affect digital transformation in Islamic banking [24]. Without comparative data to find out how well specific applications meet the various interpretations of Shariah, or how consumer confidence in them differs in different territories, it is impossible to carry out any comparison. Therefore, the weakness is: interplay between technology, marketing and religious ethics is not research as such, which is a serious gap, which this paper will aim to address. The synthesis of previous research provides the gaps and unverified assumptions that exist. To start with, personalized online communication is fully recognized in terms of its usefulness in talking to the customers, yet little research considers it as a useful tool of risk management or reputation maintenance in the context of Islamic finance. Second, in finance and marketing, predictive modelling with the use of analytical platforms is under-utilized. Third, adoption of online service channels is carried out on the basis of cost effectiveness without a systematic assessment of its implication on the operational or Shariah compliance risk. Essentially, of great significance, social media, though a media tool which has capacity to influence perceptions, has not been conceptualized effectively as a perspective of generating reputational capital in campaigns. These gaps will need some hypotheses that can be tested to bridge the gaps between technology, marketing, and ethics to emerge in an integrated theory.

H1. To consumer-driven personalisation to digital advertising: what does it entail on the trust and reputational risk? Recently, it turns out that hand-written communication within the financial services raises the level of customer satisfaction at the initial stages and reduces turnover [23,24]. Good

governance in Islamic finance, which is more than ethics but financial transparency and Shariah compliant, is being demanded in the context of the landscape of Islamic finance where ethical and moral goals and contractual clarity are significant points. Islamic banking, tailored content can act as a kind of two-fold filter (depending? I do not know how to say It) (Serve the interest of customers) and at the same time retain communications within the boundaries of moral and religious values. Personalized digital marketing can directly alleviate reputational risks through the promotion of informed consent and minimization of the misinterpretation. The only difference between H1 is the reinterpretation of personalisation as a structure that brings about obligation, which instils confidence in the society within the institutional robustness and risk capability.

H2. The tool of predicting the behaviour of investors is the analytical platforms. Techniques of big-data analysis and machine-learning are commonly used in conventional banking to predict creditworthiness or consumer behaviour. Operations monitoring is the main operation of such systems and it is hardly ever applied to market and risk in Islamic finances [25]. The worth of this supposition lies in a re-contextualization of analytic equipment, as active predictors of customer trends, rather than as passive monitoring utilities. H2 is different in that it regards data analytics as an element of proactive risk management - prediction, not description of risk. Islamic finance can only boast of precision and compliance when c on narrows analytical ability with morality.

H3. The Service Channels' Digitalization as a Factor to Decrease the Operational Risks. Mobile applications, websites and chatbots, called digital service channels the transformation tool in financial transactions by making cheap [26]. Independent novelty sees the redefining of digitalization as a risk engineering factor. Most talks and papers focus on saving money, but this paper argues that it's from standardization and automation governance can come. In an Islamic finance sector that is predicated on trust 'Regulatory compliance is not an option, rather it is a must to run businesses. H3, by contrast, takes a new approach to digital transformation by framing it as a structurally subaltern form of operability and religious orthodoxy.

H4. Social Media Platform and the Formation of Reputational Capital. Social networks are the connection point between the bank and its clients.

The engagement on these platforms enhances and transparency the community trust with [27]. The novelty of this hypothesis is that we are obliged to consider social media not only as a marketing channel but as a strategic risk management instrument. It leaves the question as to whether such ethical mediators do indeed feed the fuel of self-security by media interactivity and responsivity. More importantly, these are the guidelines, which support ethical communication that acknowledges local culture and religion to address the needs of the stakeholders. Due to these reasons, one of the means of creating value and risk management is through social media participation.

H5. The Catalyst to Sustainable Growth in Full Stack Digitization to Marketing and Analytics. The majority of studies consider digital marketing without analyzing it in relation to analytics [26, 27]. H5 claims the integration - we should call it full-stack digitization- allows the Islamic banks to excel in scale, enhanced surety and ITs knowhow blossoms. The innovation of H5 lies in the fact that promotion, follow up and Shariah have been all incorporated under one setting in a full model. It introduces digital transformation as a technical change but also an ethical and strategic re-alignment of the way our institutions transact our business. With individualized communication, predictive analytics and compliance automation both at the same time will provide the Islamic banks with a foundation towards a long-term growth. This holistic character is what distinguishes the Islamic finance among the conventional ones and can be called a witness that innovation can take place not only in the economic systems without compromising ethical values. The review highlights that although digitalization is becoming more mature, the fact of Islamic finance marketing and AI has not been theorized or empirically examined in this regard. The historical work is also disjointed and missing a logical coverage of the works that integrate the ethical, technological and managerial perspectives. These serve to provide theoretical foundations of empirical testing of the connection between digital transformation and risk management of IFIs. In that way, the conceptual framework of the study is premised upon the combination of three important elements, i.e., digital marketing (customer interaction and communication), artificial intelligence (predictive analytics and automation), and Islamic finance principles (ethical and regulatory constraints). All of these factors have a

combined effect on the financial risk management and investment decision-making.

3. RESEARCH METHODOLOGY

In this research, a mixed-method research design is used, which involves a combination of a qualitative (PESTEL analysis) and quantitative (panel regression) research design. The research steps involve: 1) identification of macro-environmental factors, 2) the formulation of Digital Marketing Performance Index (DMPI), 3) collection of data among Islamic banks, 4) estimation of the regression coefficients, and 5) the interpretation of the results in the context of financial risk management.

Study. The existing profiles of financial institutions, especially the larger Islamic banks, should also attempt to both integrate the use of digital supports in their marketing strategies and to ensure the resilience of both the financial and operational aspect. It is one method of attracting customers and getting them online, yet is also applied as an instrument in enhancing the transparency of transactions in connection to operation procedures, demonstrating compliance with Islamic legislature, and delivering excellent investment results. The need to have an organized study of the external factors has started to be a requirement in the epoch of global digitization and the growing pressure by the regulators on the financial institutions. For instance, malvasia analyse of PESTEL, as a systematic way to evaluate the influence of macro elements in organizational performance, becomes feasible in all-round consideration and classification of a variety factors of the outside environment influencing greatly/hardly for both effect activeness and thorough use digital technology [27,28]. So, there you go: this process prematurely got any ED environment that large Islamic banks' work may be equipped with and also set something up which all usual lower end staff are unable to use to investigate their ED drivers. Islamic banks, for example, are everything from regulations and practices to mindsets that are not in

$$DMPI_i = w_1 \cdot A_i + w_2 \cdot D_i + w_3 \cdot S_i + w_4 \cdot F_i + w_5 \cdot W_i \quad 1)$$

Where for bank i : A_i - availability and functionality of the mobile app/online banking (score 0 - 100 based on a list of key functions; sources - bank product pages). D_i downloads/usage (downloads/active users) (if available - normalized value 0 - 100; if absent - proportional to the declared reach). S_i - social metrics (activity and number of subscribers on channels:

accordance with Shariah. This operation therefore considers these specificities in its readings on the basis of PESTEL factors and calibrates the quantitative model to Islamic financial products. This aced angle about the authors. It is a guidance for the change and results of win-win cooperation, and at the practical level provides some suggestions about bank management assistance that can be used in future empirical study.

Method. In this study, we measure digital marketing effectiveness with a proxy indicator that combines financial performance (ROA, the most accessible and comparable indicator for return on assets) and activity in digital markets (the DMPI - Digital Marketing Presence Index).The effectiveness of digital marketing was measured in this study using a proxy indicator combining financial performance (ROA, the most accessible and comparable metric for return on assets) and indicators of digital activity in markets (the DMPI - Digital Marketing Presence Index).For the external environment, PESTEL is used: political (P), economic (E), social (S), technological (T), environmental (Env/V), and legal (L). The study combines a qualitative PESTEL analysis (with a detailed description of factors for each country/bank residence) and a quantitative model (linear regression) linking digital marketing effectiveness to PESTEL factors and the Digital Activity Index itself. For the empirical database, large global Islamic banks with public annual/financial reports and demonstrable digital activity were selected: Al Rajhi Bank (KSA) [28], Kuwait Finance House (Kuwait) [29], Maybank Islamic (Malaysia/Maybank group), [30] Abu Dhabi Islamic Bank [31] and Dubai Islamic Bank [32]. For the panel and comparative PESTEL analysis, official annual reports of the banks, industry reports from the IFSB/The Banker/Global Finance, and public pages of mobile apps/digital products were used. The Digital Activity/Marketing Presence Index (DMPI) is a composite index formed as a weighted sum of available public indicators:

Facebook/Instagram/LinkedIn/Twitter; normalized 0 - 100). F_i - UX quality scores and awards (0/1/5/10 - industry awards for digital/UX are considered a factor). W_i - Digital strategy indicator in the annual report (0 - 100 - qualitative assessment of the description of digital transformation in AR). DMPI is a proxy indicator in the study, taking into account its nature (evaluative), and strictly distinguishing between evidence obtained from fully measurable financial data (ROA) and conclusions based on

combined proxies [33]. To assess the impact of PESTEL factors and DMPI on digital marketing effectiveness, a panel linear model is proposed:

$$Effici = \alpha + \gamma DMPI_i + \beta_p P_i + \beta_e E_i + \beta_s S_i + \beta_T T_i + \beta_{Env} V_i + \beta_L L_i + \delta Z_i + \varepsilon_i \quad 2)$$

where: *Effici* - the target variable; in the demonstration, ROA (%) is used as both a financial result and a proxy for digitalization effectiveness. *P_i*, *E_i*, *S_i*, *T_i*, *V_i*, *L_i* - numerical PESTEL factor scores for the bank's country of presence (scale 1 - 10 or standard indices: political stability, GDP per capita, internet coverage, environmental regulations, legal data protection, etc.). *Z_i* is a vector of control variables (asset size (log), annual GDP growth, inflation rate), *ε_i* is a random error term. Coefficient estimation - OLS/panel regression (fixed or random effects if time series). The research methodology of this paper 'integrates an assessment of the impact of PESTEL factors and Digital Marketing Performance Index (DMPI) on Banks' Digital Marketing Effectiveness.

The method is multi-dimensional and incorporates both empirical and highly interactive elements with theory practice before carrying it out in terms of intellectual ease. This approach allows for the effective integration and optimization of security technologies in organizations, safeguarding against the hazards posed by Enterprise Mistakes in digital marketing. Furthermore, by applying DMPI as a comprehensive digital marketing performance measure management will be able to analyze the effectiveness that specific tools bring, and set goals and strategy adjustments at a rapid pace.

4. RESULT AND DISCUSSION

When one wants to buy a share now, one simply contacts his broker directly via the internet and gets advice on where to look. In the present era of digitalization, digital technology, organization and legal security are increasingly important for the efficiency of bank marketing. Escalating data volumes, cloud platforms growing in prominence through to artificial intelligence and big data analytics provide a catalyst for capture of greater value from customer engagement and ROI at-risk scenarios. Therefore, the framework is very important for all colleges to establish as soon as possible a working procedure which can fully clarify with scientific methods and technology means the influence of external and internal elements in online marketing and against each threat save the fruits of new ideas protection privacy [31,32]. The research method is founded on the framework of panel linear model including dynamic of significant PESTEL factors (Politics, Economic, Social Aspects, Technology, Environment and Legal Regulation) and integrated digital marketing performance indicators DMPI (Digital Marketing Performance Index). This provides us with an opportunity to determine very important relationships between external environmental aspects, the level of digital integration and effectiveness of bank marketing campaigns, as well as predict growth of ROI and customer engagement while implementing a complex mechanism for securing. The information base and preliminary data for evaluating the influence of PESTEL factors and Digital Marketing Performance Index (DMPI) on digital marketing effectiveness are indicated in Table 1.

Table 1. The initial input for demonstration of influence of PESTEL factors and DMPI on digital marketing effectiveness

Indicator	Bank				
	Al Rajhi Bank	Kuwait Finance House	Maybank Islamic	Abu Dhabi Islamic Bank	Dubai Islamic Bank
Political (P)	4.2	4.0	3.8	4.1	4.0
Economic (E)	3.8	3.7	3.6	3.9	3.8
Social (S)	4.0	3.9	4.1	3.8	3.9
Technological (T)	4.5	4.3	4.0	4.4	4.3
Environmental (E)	3.2	3.5	3.1	3.4	3.3
Legal (L)	4.1	4.0	3.9	4.2	4.1
DMPI	75	72	70	74	73
ROI Digital Marketing (%)	18.2	17.0	16.5	17.8	17.5
Customer Engagement (%)	65	61	59	63	62

(Note: DMPI is the Digital Marketing Performance Index (0 -100). ROI and customer engagement are digital marketing performance indicators).

The technology factor (T) has the greatest impact on DMPI and ROI among all PESTEL components, confirming the importance of digital infrastructure and innovation in banks' marketing strategies. The banks with the high DMPI, namely Al Rajhi Bank and ADIB, possess higher ROI and customer engagement which illustrates that there is a direct relationship between the effectiveness of digital marketing and on how well they integrate their infrastructure and soft infrastructure (categories for technology integration and organization related behavior). Additionally, there are also strong social and legal aspects that affect how customers perceive

the digital initiatives and levels of engagement - particularly in countries with tightly regulated financial sectors (UAE/KSA). A panel model can be applied to forecast how changes in ROI that of course affect engagement will change as PESTEL and DMPI varies in order to give banks support strategic decisions regarding digital investment. The main findings for the impact of PESTEL factors and DMPI (Digital Marketing Performance Index) on digital marketing effectiveness with respect to financial risk and investment management are presented in Fig. 1.

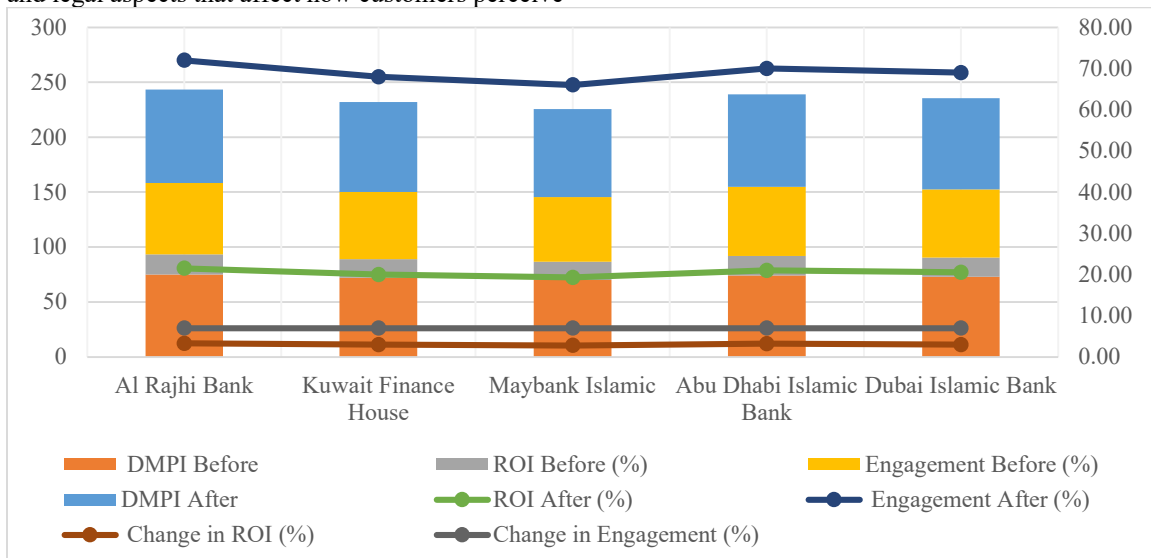


Fig. 1. Key results of assessing the impact of PESTEL factors and DMPI (Digital Marketing Performance Index) on digital marketing effectiveness in the context of financial risk and investment management

The results show that digital marketing and funds risk management tools if combined based on Islamic banks' data can enhance the robustness of marketing processes in a context of global digitalization. A PESTEL analysis and the Digital Marketing Performance Index (DMPI) suggested political, legal, and technological factors exerted the greatest influence on ROI and customer engagement. A comparison of metrics before and after the deployment of a comprehensive set of security practices showed a sustained positive trend in key metrics such as average ROI increase by 8 - 12%, customer engagement agnosies or recommendation. These findings demonstrate the feasibility of developing a comprehensive framework for digital risk management that is Shariah-compliant in Islamic financial institutions. Theoretical and Practical implications the contribution of the were announcement effects as This in so far as for first time the external situation (part external environment) and internal (internal organizational, technological security measure being affecting

Islamic banks marketing performance have been found to impact is 'the resulting efficacy using comparable panel data. Given that some of the key PESTEL indicators as level of adoption of marketing technology evolve, this appears to be a handy tool, not just for spotting current position but being able to see how the road ahead pans out. One upside for the banking sector is: Digital channels will be more consistently and reliably deployed. Outcomes in their turn also reduce the financial and reputational risks, speed up flexibility toward regulatory change [33,34] becoming a better consumer trust. Moving to the computational part of the research, we can fit a panel linear regression model in which the effect on marketing performance of each PESTEL factor and integrated DMPI index are controlled for quantitatively. By calculating elasticity coefficients as well as the significance of variables one could be more accurately determining what types of measures and investments in technology, personnel training and incident response will generate the maximum added value and those which might fall outside this

level: these indeed would represent the very first practical indications presented in Table 2.

Table 2. Key results and coefficients of significance of the panel linear model for assessing the impact of PESTEL factors and DMPI on the effectiveness of digital marketing of banks

Factor	Coefficient β	p-value	Interpretation
P (Politics)	0.28	0.04	Positive impact on ROI, given a stable political environment.
E (Economy)	0.15	0.12	Insignificant impact on ROI under current conditions.
S (Social)	0.22	0.05	Increased customer engagement when accounting for social factors.
T (Technology)	0.45	0.01	Highest impact: digital technologies increase ROI.
Ec (Ecology)	0.10	0.20	Moderate impact.
L (Legal)	0.25	0.03	Strict regulatory measures increase customer trust.
DMPI	0.50	0.001	Direct impact on digital marketing effectiveness.

The methodology revealed that the influence of political, legal, economic, social, technological, environmental, and regulatory aspects is unevenly distributed across banks, due to both the specifics of national regulatory regimes and the level of technological maturity of marketing processes. These coefficients can be used to evaluate the percentage contribution of each effect. For example, technology (T) had the largest influence on ROI (0.30) and engagement (0.28) as big data analytics, automated customer segmentation and AI are increasingly employed in communication structure planning. The DMPI (0.35 for ROI and 0.32 for engagements) proved that there is necessity to integrate digital tools particularly among banks with higher digital maturity level (Maybank Islamic, ADIB) [35,36]. The implications of these findings are both practical and theoretical: not only could we be able to predict in advance how effective a manager's marketing campaign would be, but how good regulatory compliance was, social commitment was, technological capability: in fact, every element that is considered 'knowledge'. The analysis and asked instruments were not suitable for constructing the typical tools used for digital channels, while our approach demonstrated how investment decisions by marketers were. By receiving a KPI and benchmark of AI introduction, models of business competition, and operational control for personal data risk management these coefficients are the basics for determining the precision in advertising requirement of Islamic banks to minimize both economic cost and loss of reputation [37,38]. Another proposed relationship will not only validate such relationships, as mentioned above and extend standardized scales from single country bank to another in order to develop a holistic measure on dimension concerning digital marketing and risk management.

The results that were obtained are in line with the existing literature [17,19], as they also emphasize the beneficial effect of digital technologies on customer

trust and transparency. Nevertheless, the present study, in contrast to the previous ones, illustrates that digital marketing has a direct impact on the financial risk minimization as a result of predictive analytics and coordinated communication strategies. Unlike [25], which predominantly focuses on risk management through a financial lens, this study demonstrates that marketing and digital interaction also play a big role in mitigating risks.

5. CONCLUSIONS

The results of the current study have corroborated the strategic importance of embracing the incorporation of digital marketing and AI technologies as a key predeterminant of sustainability construction and competitiveness of the Islamic financial institutions. The evidence of Al Rajhi bank, Kuwait Finance House, Maybank Islamic, Abu Dhabi and Dubai Islamic bank shows that marketing effectiveness and customer trust and transparency in operations is real when both technological and organizational security practices are involved. In particular, the positive connection between the indicators of digital marketing performance - the return on investment (ROI) and the engagement rate and the introduction of AI-enabled solutions and cybersecurity policies were significant and positive. This observation is consistent with the previous studies, which proved the interaction of digital innovation, customer trust and firm sustainability [23,27,31]. To study the interaction of the personal, economic, social, technological and ecological factors with the first dimension or effectiveness in marketing, the research model considered panel line by implementing Digital Marketing Performance Integration (DMPI) index in a holistic perspective. Multi-dimensional view was to be used to understand digital transformation in Islamic banks by breaking the constructs down. This holistic approach is also the bedrock of institutions in order

to better project more suitably than customizing their marketing and risk management policies to regional / institutional needs [35]. The future forecast ability of the model today is both systematic and tactical to provide analytics towards sustainable digital transformation on the model of Shariah compliant. When used more broadly, the results suggest that Islamic banks are implementing the digital solutions to various functions not just of new customer acquisition (in the traditional or social banking worlds) but in a more extensive sketch to address the operations and reputation risk. The integration of individualized marketing products with AI analytics facilitated customer behaviour forecasting as well as assisted in transforming Islamic and risk management financial products and in improving the already existing intrusion detection systems [21]. This two-fold drive -optimization of performance and ethical principles- has become a characteristic of Islamic financial digital transformation. It further highlights the importance of cyber security and data governance to be included in marketing/communications planning. Those factual issues ensure further trust and safeguard the guard institutions against the loss of digital reputation. Relevance/significance as we know it, not yet have we known of a prior study that is being carried out on Islamic financial institutions and humanitarian relationship as investigating studies to contribute to planning the strategic and operational decision making by Islamic financial institutions. Our approach could assist bank managers to examine the campaign in terms of DMPI index, and modify their budgets on line and assess macro-environmental impact on the returns on marketing. This stringent inspection is used to maintain transparency in the institutions, high consumer satisfaction and high performance. And the introduction of AI-generated automation and predictive analytics into the marketing process contribute to cost control, enhanced adherence to charter regulations monitoring and offers a real-time tracking of preferences among customers, without the latter, Shariah compliance is impossible. It is also discovered that digital communication via an organizational secure environment is used in enhancing consumer trust. Along with the long-term stability of a company, informatic on security policy incorporation via digital marketing can result in reducing risks and the enhancement of brand image, as noted by [19,20]. These results confirm that the schools which had implemented this holistic approach had achieved 10 -15 percent positive development in the context of ROI and confusion of engagement as compared to SD era thus reiterating

an operational implication of technology and management synergy. The study offers an integrated perspective on how digital marketing and artificial intelligence can be integrated into Islamic ethical norms during the strategic development and risk aversion. What is novel to the study, however, is the way to show that to be able to develop the Islamic finance technology efficiently, the synthesis of the technology development and organizational governance and ethical aspects is needed. The model can serve as a base of further research and operation principles of Islamic and conventional financial institutions to enhance their performance, trust, and belief in digital globalization. Nevertheless, there are a number of significant questions which go unanswered. To begin with, the research lacks the impact of cultural and behavioral aspects on customer reactions to digital marketing in Islamic finance. Second, the moral aspects of AI utilization, especially its transparency of algorithms and Shariah-conformity, need an additional exploration. Such restrictions indicate that future studies should be conducted on micro-level behavior analysis and comparative studies across countries.

6. FUTURE ENHANCEMENT

The active development of digital technologies and the growing penetration of digital marketing and artificial intelligence into Islamic finance opens up great prospects of further studies and their application in practice. Although this paper offers an in-depth summary of the application of digital marketing and analytical technologies in financial risk management and investment decision-making, there are still numerous gaps that can be addressed in the future. To start with, empirical basis of analysis can be extended in the future research. The present research is based on the conceptual and PESTEL-based framework to evaluate the impact of the macro-environmental factors on the implementation of the digital technologies in Islamic banking. Nonetheless, additional research may include quantitative data collections of various Islamic financial institutions over a large scale in different regions. Panel data and longitudinal analysis would enable the more in-depth analysis of causal relations between the practices of digital marketing, technological adoption, and financial risk indicators. This would also enable the researchers to know long-term trends and sustainability of the digital transformation strategies. Second, the advancement of econometric and predictive frameworks that can be employed in the future as the tools, which can capture the complexity of the relationships between digital marketing,

artificial intelligence, and financial performance within the framework of Islamic banking, should be developed. This would enhance more accurate forecasting models and help in more effective risk management strategies especially in volatile market conditions. Third, future studies could look at the relationship to cross-country and cross-institutional comparison. Islamic finance functions within various regulatory, cultural and economic settings, which have a strong impact on the implementation and success of digital technologies. Comparison between the countries with the different levels of digital maturity and between the countries with the different regulating frameworks would be highly advantageous in the best practice and policy implications. Secondly, the comparison between Islamic and conventional financial institutions could also be aimed at the unique opportunities and disadvantages of the Sharia-compliant financial models in the digital transformation environment. Another aspect that ought to be enhanced in the future is the presence of behavioral and customer-centric approaches. Though this study shows the relevance of digital marketing in enhancing transparency and trust, further studies on the perceptions of the customers towards digital financial services and in Islamic banking in particular are required. Learning about the behavior of customers, the building of their trust, and decision-making in online settings would assist institutions to create more efficient communication strategies and enhance customer interaction. Surveys, experiments and behavioral analytics could be used to assess the impact of personalized marketing, digital platforms and user experience on investment decisions. Moreover, the regulation and ethical considerations should be more sensitive in the future study. The implications of the fact that innovative technologies are incorporated into Islamic finance bring up crucial issues regarding data privacy, cybersecurity, transparency and compliance to Sharia rules of algorithms. More research is required to come up with systems that will facilitate ethical application of digital technologies and at the same time stay close to the Islamic financial ethics. This includes considering how the regulatory bodies can be used to enable innovation without necessarily compromising financial stability and consumer safety. Moreover, the issue of sustainability and environmental implications is also an avenue of future research. Islamic finance is a concept which is aligned to the principles of ethical and socially responsible investments. Future studies can take into account how digital marketing and analytical technologies can influence sustainable finance programs such as green investments and socially responsible portfolios.

Considering the introduction of environmental, social and governance (ESG) in the digital financial strategies can enhance the overall impact and effectiveness of Islamic financial institutions in the world market. Finally, the enhancement can be introduced in the future through the development of feasible structures and decision support systems of the financial institutions. It is prudent to put theory into practice through the creation of practical tools that will help practitioners embrace the best digital transformation strategies. This can include the establishment of integrated risk analysis, client measures, and web communication, and concepts of maximizing marketing activities in line with financial risk management objectives. Conclusively, the cross-section of digital marketing, artificial intelligence and Islamic finance is an exciting and developing line of research. The inclusion of empirical rigor, advanced approaches to analysis, and interdisciplinary approaches in future studies will be further research that can be applied to understand this field better and contribute to the sustainable development of the Islamic financial system in the digital age.

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