BIG DATA-ENABLED ANALYSIS AND ITS IMPACT ON ENHANCING MARKETING CAPABILITIES: A FIELD STUDY OF ISLAMIC BANKS IN JORDAN

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ABSTRACT: *The research aimed to demonstrate the exploration of the influence of big data analytics on the enhancement of marketing capabilities in Islamic banks in Jordan. The study utilized a descriptive analytical approach, with a focus on individuals in senior management roles within the study population. A random sample of 140 employees was selected, and questionnaires were distributed, yielding 100 valid responses for statistical analysis. Various statistical methods were employed by the researcher. The findings indicated a significant positive impact of big data analytics, encompassing data capture, curation, and analysis, on the advancement of marketing capabilities. In light of these results, the study recommends a strategic focus on investing in big data infrastructure. Islamic banks in Jordan are encouraged to channel efforts into developing robust infrastructure that supports enhanced capabilities in data capture, curation, and analysis. This may involve upgrading existing systems or adopting new technologies to ensure the efficient and effective processing of large datasets. A well-established infrastructure is deemed crucial for facilitating more precise and insightful marketing strategies.*

Keywords: Big Data Analytics (Data capture, Data curation, Data analysis), Advancing Marketing Capabilities

1. INTRODUCTION

In the dynamic landscape of modern business, the advent of big data analytics has emerged as a transformative force, reshaping industries and revolutionizing traditional paradigms [1, 2]. One sector where this impact is particularly profound is marketing, where the ability to harness and analyze vast amounts of data has ushered in a new era of precision and insight [3]. This study delves into the fascinating intersection of big data analytics and marketing capability development, focusing on a distinctive field Islamic market.

Big Data analytics, characterized by the extraction of meaningful patterns and insights from massive datasets, has become a cornerstone of strategic decision-making for organizations worldwide [4]. Its integration into marketing practices has brought about unprecedented opportunities and challenges, prompting businesses to rethink their approaches to customer engagement, market segmentation, and overall strategy formulation. This study seeks to unravel the intricate web of influences that big data analytics exerts on the development of marketing capabilities, with a specific lens on Islamic markets [5].

Marketing capability development, on the other hand, represents the organization's ability to effectively leverage its resources, knowledge, and technologies to achieve marketing objectives [1]. In an era where consumer behavior is increasingly complex and unpredictable, the role of marketing capabilities becomes paramount [6]. This research endeavors to explore how the infusion of big data analytics influences the development of marketing capabilities in the context of Islamic markets, presenting a unique perspective on a niche but influential segment of the global economy.

The study's variables form the backbone of our exploration, serving as the focal points through which we dissect the intricate relationship between big data analytics and marketing capability development. By scrutinizing these variables, including but not limited to data-driven decision-making, customer segmentation, personalized marketing strategies, and technological integration, we aim to provide a comprehensive

understanding of how organizations can harness the power of big data to enhance their marketing capabilities in the specific context of Islamic markets.

As we embark on this journey of discovery, our aim is to contribute not only to the academic discourse surrounding big data analytics and marketing capability development but also to offer practical insights and recommendations for businesses operating in Islamic markets [7]. In doing so, we aspire to equip organizations with the knowledge and strategies needed to thrive in an era where data is not merely a commodity but a strategic asset in shaping the future of marketing.

2. GAPS IN STUDY

Big Data Analytics, or BDA, is changing how businesses function and make decisions. It has become a disruptive force in a number of industries. Its impact on marketing capability development (MCD) is an increasingly interesting topic in the field of marketing. This study explores the particular context of Islamic banks in Jordan with the goal of determining how big data analytics adoption and integration increase marketing capabilities in this distinct financial environment.

The banking sector in Jordan, particularly Islamic banks, has witnessed substantial growth in recent years. As these institutions navigate the complexities of the financial market, understanding the role of big data analytics in shaping their marketing strategies becomes imperative. This research seeks to bridge the gap in existing literature by providing empirical insights into the specific ways in which Islamic banks in Jordan leverage big data analytics to develop and strengthen their marketing capabilities.

A field study approach is employed to gather quantitative data through discussions with marketing executives, data analysts, and other relevant stakeholders within Islamic banks. The research aims to capture the nuanced strategies and challenges faced in integrating big data analytics into marketing practices. Additionally, surveys and data analytics tools will be utilized to quantify the impact of these initiatives on key marketing performance indicators.

The findings of this research are anticipated to offer valuable implications for both academia and practitioners. Understanding how Islamic banks in Jordan harness big data analytics for marketing capability development can provide a benchmark for similar financial institutions globally. Moreover, the insights gained from this study can inform marketing professionals, policymakers, and researchers about the effective strategies and potential pitfalls associated with the integration of big data analytics in the marketing domain within the specific context of Islamic banking in Jordan.

3. RESEARCH OBJECTIVES
i.   To examine the impact of Data capture in Marketing Capabilities in Islamic Banks in Jordan.
ii. To examine the impact of Data curation   in Marketing Capabilities in Islamic Banks in Jordan.
iii. To examine the impact of Data analysis   in Marketing Capabilities in Islamic Banks in Jordan.

4. LITERATURE REVIEW
4.1 Big Data Resources
In recent years, the advent of big data has brought about significant transformations in the realm of business analytics, reshaping conventional approaches in several fundamental ways. Firstly, it has enabled the collection of data from entire populations or substantial segments, diverging from the traditional reliance on small sample sizes. Secondly, the shift from significance testing to substantive measurements has been a notable change, emphasizing the importance of meaningful insights over statistical significance. Thirdly, the utilization of continuous data streams, as opposed to point-in-time surveys, has become a key trend. Lastly, the integration of data from diverse sources has become more feasible, facilitating the generation of unified insights [8, 9].

This paradigm shift has paved the way for integrated predictive modeling with data from multiple sources, encompassing user sentiment analysis, social listening, web analytics, trend analysis, and segmentation. Such models are now practically achievable, offering a holistic perspective on various phenomena (ibid.). Researchers and practitioners across different fields have begun to showcase the value of big data through various applications [8, 9].

In the realm of public health and health policy, [10] utilized grocery store purchasing patterns, nutritional values, and medical records to assess the impact of public health education initiatives. Similarly, [11]. demonstrated predictive algorithms for disease case ascertainment by leveraging medical records. Civic behavior has seen the analysis of Twitter data combined with professional reports to predict insurgency events [12]. Environmental studies have benefited from the combination of heterogeneous information sources to model the effects of climate change over time [13]. In education, [14] employed a vast dataset to reveal the long-term effects of grade inflation by integrating sentiment analysis, free text, and ordinal scales. Interestingly, big data has also yielded counterintuitive findings, like the finding that a materials science study's random selection method worked better than a meticulously planned experiment. [15, 16].

Big Data's ability to evaluate continuous data streams as opposed to discrete point-in-time samples is a key benefit. This is especially true for mobile devices and networks, where telecom providers optimize coverage and traffic using mobile usage statistics, geolocation, and event communications. This is a trend that should continue as 5G networks become more widely adopted globally [17].

In retail marketing, the emergence of mobile check-out platforms for supermarket shoppers presents a wealth of data compared to traditional point-of-sale (POS) systems. These platforms not only provide purchase data but also offer insights into shopping activities at the shelf level. This allows retailers and manufacturers to influence purchase decisions in real-time by providing coupons, messages, and other offers [18]. Marketers find this particularly relevant as the customer journey becomes more fragmented, spanning multiple channels. The concept of "real-time relevant" marketing, introduced by [19], emphasizes initiating conversations with customers at the crucial moment of decision-making based on instantaneous data.

While big data presents new opportunities in decision-making, it is imperative to acknowledge the complex interrelationships and challenges. Establishing platforms for real-time analytics, ensuring data accuracy, privacy, and protection, and addressing issues like high-volume data storage are critical considerations [19]. Additionally, by evaluating social media content for sentiment, emotion, and passion and supplementing it with quantitative analysis of trend reports and social interactions, analysts play a critical role in connecting machine learning with descriptive data. [20].

4.2 Marketing Capabilities Resources
The term "dynamic marketing capability," coined to describe a firm's adaptability to external changes by integrating and reconfiguring internally, encompasses the ability to foresee and respond to market dynamics [22].

The current state of digital marketing has seen a major shift in emphasis toward an outside-in strategy that makes use of real-time data streams from platforms such as Google Analytics. This is especially true with the introduction of big data. Nevertheless, this strategy frequently focuses on taking advantage of the current clientele and portfolio, effectively managing the "business of today." The goal of true adaptive marketing is to develop the "business of tomorrow" by utilizing trends before they materialize through an exploratory phase that is guided by outside-in data. [23].

Market learning, adaptive experimentation, and open marketing are the three adaptive capabilities that [24] suggests using to negotiate the complexity of the market, technological transformation, and creative competition. Acquiring a profound understanding of structural shifts in the market, new trends, and unfulfilled demands is known as market learning. Continuous learning processes are a component of adaptive experimentation, and networks with partners and channels are fostered by open marketing. [25] Give adaptive capabilities more subtlety by defining "outside-in" as coming from both external sources and the company's marketing department. Inter-organizational dispersion is the effect that outside parties in the ecosystem have on the marketing function, whereas intra-organizational dispersion is the effect that non-marketing personnel have on improving

marketing capabilities.

The "holistic" nature of effective marketing is one of the main conclusions drawn from this literature analysis. [26] Promotes a comprehensive strategy for marketing that links marketing to entire corporate performance by utilizing specialized, cross-functional, and dynamic capabilities [27]. The study reveals "substantial, but not universal," support for the claim that a constricted marketing mindset that concentrates on a narrow region is less likely to predict beneficial business outcomes than a holistic mindset.

Examining the development of leadership within the marketing organization reveals a similar trend [24] draws attention to the widening gap between marketing capabilities and specialization when these operations are not integrated [28] highlights how crucial culture, flexibility, adaptation, and an integrated strategy are to making wise marketing decisions.

5. RESEARCH MODEL AND RESEARCH HYPOTHESES

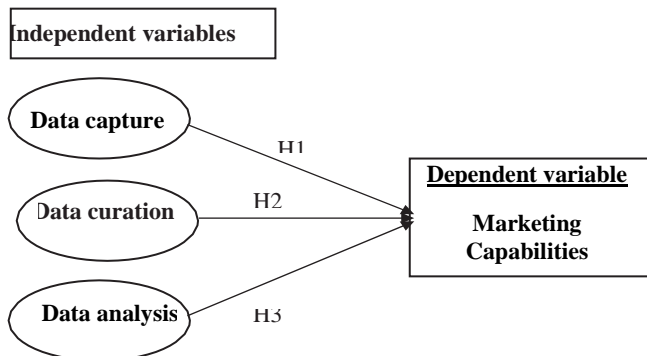The following figure illustrates the research Independent and dependent variables:

Figure: Research Model

H1: Big Data Analytics (Data capture, Data curation, Data analysis) have no significant positive impact on Advancing Marketing Capabilities and the following sub null hypotheses:

H 1.1: Data capture has no significant positive impact on Advancing Marketing Capabilities.

H 1.2: Data curation has no significant positive impact on Advancing Marketing Capabilities.

H 1.3: Data analysis has no significant positive impact on Advancing Marketing Capabilities.

6. RESEARCH METHODOLOGY

The research methodology describes the steps taken to conduct the study, including the approach, the community's description, the researcher's considerations when choosing a sample, the preparation of the research tool (questionnaire), its development and verification of its validity and reliability, the statistical methods used to analyze the data, the extraction of findings, and a thorough explanation of these steps.

6.1 Research Approach and Method:

To achieve the research objectives, the researchers employed the descriptive analytical approach. Through this approach,

the research topic was described, its data analyzed, the relationship between its components and the opinions presented around it were examined, along with the processes it involves and the resulting impacts.

6.2 Information Sources:

Secondary Sources: Books, journals, articles, reports, research undertaken in many fields, books, Arabic and foreign references, and earlier studies that addressed the subject issue were cited as secondary data sources. In addition, reading and research were done on a variety of websites.

6.3 Primary Sources: Using a questionnaire created especially for this purpose, primary data was gathered to address the analytical components of the research topic. The collected data were then processed and analyzed using the statistical program SPSS, which served as the primary tool for research.

In summary, the researcher adopted a descriptive analytical approach to fulfill the research objectives. Secondary sources, such as books, articles, and previous studies, were consulted. Primary data were collected through a questionnaire.

6.4 Validity & Reliability Tests

Before data collection from the whole sample of participants began, a reliability test was conducted to assess the validity of the questionnaire. A subset of thirty recipients were chosen at random from the entire group for the initial assessment, and they were given the questionnaire. The reliability of the survey was examined using Cronbach's Alpha, an internal consistency score. Table 4 presents the results, which show that all four categories of the questionnaire (data gathering, data curation, data analysis, and marketing capabilities) have statistically significant Cronbach's Alpha values that are higher than the necessary cutoff of 0.70 or 70%. These results demonstrate that the questionnaire has demonstrated adequate dependability, proving that it is appropriate for additional data collection and analysis.

Table 1: Reliability Analysis Test

Variables	Cronbach's Alpha
Data capture	.923
Data curation	.914
Data analysis	.862
Marketing Capabilities	.902

6.5 Population and Sampling

The study encompasses all Islamic banks operating in Jordan, totaling 4 banks: Jordan Islamic Bank, Arab Islamic International Bank, Al Rajhi Bank, and Safwa Islamic Bank. The study's sample consisted of employees with expertise in data analysis and marketing capabilities in Islamic banks, specifically those in senior management positions. A total of 140 questionnaires were distributed, with 35 questionnaires allocated to each bank. The researcher retrieved 100 completed questionnaires, amounting to 71% of the distributed questionnaires. Ten questionnaires were excluded due to various reasons, including incomplete filling, randomness in the completion process, A total of 90 questionnaires underwent analysis.

7. DATA ANALYSIS AND DISCUSSION

To examine the impact of on enhancing marketing capabilities, data analysis was conducted, focusing on applications from the perspective of employees in Islamic Banks in Jordan. The utilized data is outlined below:

7.1 Descriptive statistics for the research variables

Table 2: Descriptive of dimensions of Independent variable Big Data Analytics

Variables	Mean	SD	RANK	LEVEL
Data capture	3.91	.71	1	High
Data curation	3.89	.79	2	High
Data analysis	3.86	.81	3	High
Dependent variable				
Marketing Capabilities	3.85	.71	4	High

The assessment of big data analytics proficiency among Jordanian workers at Islamic banks is shown in Table 2.With a mean score of 3.89 and a standard deviation of 0.77, the overall level is considered high. When examined in more detail, the data capture dimension emerges as the most prominent component, attaining a high grade with a mean of (3.91) and a standard deviation of (0.71). The data curation dimension then comes in close behind at a high level, with a mean of 3.89 and a standard deviation of 0.79. The Data Analysis dimension has a mean of (3.86) and a standard deviation of (0.81), which is still an acceptable middle level despite being somewhat lower. As we go on to marketing capabilities, it is clear that the caliber is excellent.

8. HYPOTHESES TESTING

This section tests the study hypotheses as following:

H1: Big Data Analytics (Data capture, Data curation, Data analysis) have no significant positive impact on Advancing Marketing Capabilities.

To test this hypothesis, researchers utilized multiple regression analysis to determine the collective effect of the variables (Data capture, Data curation, Data analysis) on Advancing Marketing Capabilities. The results, as presented in Table (3)

Table (3) Testing the multiple regression analysis for the impact of big data analytics (Data capture, Data curation, Data analysis) on marketing capabilities.

F	B	R2	R	Sig.
8.89	3.348	0.475	0.672	0.000

According to Table 3's data, the tabular value is 2.30, however the calculated F-value is 8.89. It is clear from a comparison of the numbers found when testing this hypothesis that the computed value is higher than the tabular value. As a result, the alternative hypothesis, which holds that big data analytics, including data acquisition, curation, and analysis, has a considerable positive influence on advancing marketing capabilities, is accepted, and the null hypothesis is rejected. Additionally, the findings show that the correlation between big data analytics and marketing capabilities is 0.475%. This implies that 0.475% of the variation in marketing capability criteria may be explained by variables in big data analytics. It is believed that additional factors outside the scope of this investigation are responsible for the remaining 52.5% of the changes.

H 1.1: Data capture has no significant positive impact on Advancing Marketing Capabilities.

To test this hypothesis, researchers utilized Simple regression analysis to determine effect of the variable (Data capture) on Advancing Marketing Capabilities. The results, as presented in Table (4):

Table (4) Testing the Simple regression analysis for the impact of Data capture on marketing capabilities.

F	B	R2	R	Sig.
11.61	-.086	0.496	0.598	0.000

According to Table 4's data, the tabular value is 2.30, however the calculated F-value is 11.61. It is clear from a comparison of the numbers found when testing this hypothesis that the computed value is higher than the tabular value. As a result, the alternative hypothesis—which states Data capture has significant positive impact on Advancing Marketing Capabilities. Is accepted, and the null hypothesis is rejected. Advancing Marketing Capabilities is greatly enhanced by data collecting. Additionally, the findings show that the correlation between Data capture and marketing capabilities is 0.496%. This implies that 0.496% of the variation in Marketing Capabilities may be explained Data capture variable. It is believed that additional factors outside the scope of this investigation are responsible for the remaining 50.4% of the changes.

H 1.2: Data curation has no significant positive impact on Advancing Marketing Capabilities.

To test this hypothesis, researchers utilized Simple regression analysis to determine effect of the variable (Data curation) on Advancing Marketing Capabilities. The results, as presented in Table (5):

Table (5) Testing the Simple regression analysis for the impact of Data curation on marketing capabilities.

F	B	R2	R	Sig.
7.280	.034	.446	0.649	0.000

According to Table 5's data, the tabular value is 2.30, however the calculated F-value is 7.280. It is clear from a comparison of the numbers found when testing this hypothesis that the computed value is higher than the tabular value. As a result, the alternative hypothesis which states Data curation has significant positive impact on Advancing Marketing Capabilities. Is accepted, and the null hypothesis is rejected. Advancing Marketing Capabilities is greatly enhanced by data collecting. Additionally, the findings show that the correlation between Data curation and marketing capabilities is 0.496%. This implies that 0.446% of the variation in Marketing Capabilities may be explained Data curation variable. It is believed that additional factors outside the scope of this investigation are responsible for the remaining 55.4% of the changes.

H 1.3: Data analysis has no significant positive impact on Advancing Marketing Capabilities.

To test this hypothesis, researchers utilized Simple regression analysis to determine effect of the variable (Data analysis) on Advancing Marketing Capabilities. The results, as presented in Table (6):

Table (6) Testing the Simple regression analysis for the impact of Data analysis on marketing capabilities.

F	B	R2	R	Sig.
6.453	-.070	.461	0.612	0.000

According to Table 6's data, the tabular value is 2.30, however the calculated F-value is 6.453. It is clear from a comparison of the numbers found when testing this hypothesis that the computed value is higher than the tabular value. As a result, the alternative hypothesis states that data analysis has a significant positive impact on marketing capabilities. Is accepted, and the null hypothesis is rejected. Marketing capabilities are greatly enhanced by data collection. Additionally, the findings show that the correlation between data analysis and marketing capabilities is 0.461%. This implies that 0.461% of the variation in marketing capabilities may be explained by the data analysis variable. It is believed that additional factors outside the scope of this investigation are responsible for the remaining 53.9% of the changes.

This study aligns with previous research acknowledging the transformative impact of big data in various industries. The emphasis on using multi-source data for predictive modeling resonates with the idea of integrated predictive modeling discussed in [8]. Real-Time Analytics in Retail Marketing: The focus on real-time data streams and the use of mobile data in retail marketing aligns with the trends discussed in the literature. Real-time relevant marketing, as introduced by [19], seems to support the idea of leveraging continuous data streams. Challenges of Big Data.

Acknowledgment of challenges such as data accuracy, privacy, and protection, as well as the need for content analysts to bridge machine learning with descriptive data, corresponds with the challenges discussed by [20, 21].

9. DIFFERENCES WITH PREVIOUS STUDIES:
This study provides a unique perspective by focusing specifically on Islamic banks in Jordan, which adds valuable insights to the existing literature. This is a deviation from the broader discussions in previous studies.

Application in Banking Sector: While previous studies discuss applications in diverse fields like public health, civic behavior, environmental studies, and education, this study narrows down the application to the banking sector, specifically Islamic banks in Jordan.

Holistic Marketing in Islamic Banking: The emphasis on a holistic approach to marketing, as supported by [26, 27], is a common theme. However, this study extends this idea to Islamic banking, offering a sector-specific perspective.

Overall Contributions and Implications: This study contributes to a growing interest in understanding the role of big data in marketing capability development, especially in the unique context of Islamic banks in Jordan.

The field study approach and engagement with marketing executives provide practical insights that can be valuable for both academia and practitioners.

The study addresses existing gaps in the literature, particularly in the context of Islamic banking, and aims to provide benchmarks and insights for global financial institutions.

In conclusion, this study builds on the foundations laid by previous research on big data while offering a specialized and context-specific perspective, thereby enriching the understanding of how data activities impact marketing capabilities in the domain of Islamic banking in Jordan.

10. CONCLUSIONS
In recent years, the emergence of big data has ushered in transformative changes in business analytics, reshaping traditional approaches. The shift towards collecting data from entire populations, moving beyond small sample sizes, signifies a notable change. Furthermore, the transition from significance testing to substantive measurements emphasizes meaningful insights over statistical significance. Continuous data streams, as opposed to point-in-time surveys, have become integral, facilitating the integration of data from diverse sources for unified insights [8]. This paradigm shift has led to the development of integrated predictive modeling, incorporating multi-source data for a holistic perspective. Various fields, including public health, civic behavior, environmental studies, and education, have showcased the value of big data through diverse applications. However, the counterintuitive findings, such as the efficiency of random selection in materials science, highlight the complexity of big data's impact [15, 16].

The benefit of big data is that it can evaluate continuously flowing data streams, which is especially true for networks and mobile devices. Mobile check-out solutions provide rich data for retail marketing, enabling real-time influence over purchase decisions. However, challenges such as real-time analytics platforms, data accuracy, privacy, and content analysis must be addressed [20, 21, 29].

In the context of marketing capabilities, the advent of big data has shifted the focus to an outside-in approach, leveraging real-time data for adaptive marketing. Adaptive capabilities, including market learning, adaptive experimentation, and open marketing, are crucial in navigating market complexity. A holistic approach to marketing, emphasizing cross-functional, specialized, and dynamic capabilities, is advocated for linking marketing to overall business performance [22, 24].

The study aims to bridge the gap in existing literature by exploring the impact of big data analytics on marketing capability development (MCD) in Islamic banks in Jordan. Given the substantial growth in the banking sector, particularly Islamic banks, understanding how these institutions leverage big data analytics for marketing strategies becomes crucial. The research employs a field study approach to provide empirical insights, exploring nuanced strategies and challenges faced by Islamic banks. The findings are expected to have valuable implications for academia and practitioners, offering benchmarks for similar financial institutions globally and informing marketing professionals, policymakers, and researchers about effective strategies in the specific context of Islamic banking in Jordan.

11. RECOMMENDATIONS
Based on the findings of the study on the impact of big data analytics on advancing marketing capabilities in Islamic banks in Jordan, here are four recommendations:

Investment in Big Data Infrastructure: Encourage Islamic banks in Jordan to invest in robust Big Data infrastructure to enhance data capture, curation, and analysis capabilities. This could involve upgrading existing systems or adopting new technologies to ensure the efficient and effective handling of large volumes of data. A well-established infrastructure will facilitate more accurate and insightful marketing strategies.

Continuous Training and Skill Development: Recognizing the importance of data-related skills in the marketing field, Islamic banks should prioritize ongoing training programs for their employees. Equip staff with the necessary skills in data capture, curation, and analysis. This will empower them to leverage big data analytics tools effectively and extract meaningful insights for improving marketing capabilities.

Integration of Cross-functional Teams: Promote collaboration between different departments within Islamic banks, fostering cross-functional teams that include members from marketing, IT, and data analytics. This interdisciplinary approach can lead to a more holistic understanding of the data and its implications for marketing strategies. Encourage regular communication and knowledge sharing among these teams to maximize the benefits of big data analytics.

Implementation of Data Governance Policies: Establish and enforce data governance policies within Islamic banks to ensure the ethical and secure use of customer data. This includes clear guidelines on data collection, storage, and analysis, as well as compliance with privacy regulations. A strong data governance framework will not only protect customer information but also build trust, a crucial factor in the success of marketing initiatives.

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