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Integrating Management Information Systems in Marketing: A Survey-Based Analysis of Consumer Engagement and Business Growth through Data Analytics

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ABSTRACT

Modern marketing practice depends simultaneously on precise data, rapid information delivery, and seamless system integration. Management Information Systems (MIS) provide the core technological infrastructure that converts fragmented organizational data into actionable marketing intelligence, and firms employing MIS-driven analytics have been shown to achieve conversion rates up to 30% higher than those relying on traditional marketing approaches. This study used a structured online survey of 155 marketing professionals employed in small, medium, and large enterprises to examine the role of MIS and analytics in marketing performance. A five-point Likert scale was used to measure five key constructs: MIS integration, data analytics utilization, consumer engagement, decision-making efficiency, and business growth. Instrument reliability and sampling adequacy were confirmed with Cronbach's $\alpha = 0.89$ and KMO $= 0.82$ ($p < 0.001$). Statistical analyses were conducted in SPSS 26, including Pearson correlation, multiple regression, and mediation modeling. Strong positive correlations were found between MIS integration and data analytics utilization ($r = 0.82$, $p = 0.001$) and between analytics utilization and consumer engagement ($r = 0.81$, $p = 0.001$). Regression results indicated that MIS adoption significantly improves decision-making efficiency ($\beta = 0.64$, $p = 0.01$) and explains a substantial proportion of variance in business growth ($R^2 = 0.70$, $p = 0.001$). The predictive analytics framework yielded a 34% increase in customer retention through repeat purchases and a 29% improvement in campaign targeting precision. Overall, the integration of MIS with data analytics enhances marketing outcomes, leading to higher customer retention and improved profitability.

1. Introduction

The marketing landscape is undergoing rapid transformation driven by advances in data technologies and digital intelligence. Contemporary firms increasingly depend on digital tools that

process real-time information and systematize decision-making, with an estimated 78% of marketing activities now influenced by data-centric systems. Within this context, Management Information Systems (MIS) represent a core technological backbone, integrating data collection, storage, processing, and visualization into a unified platform **(Kousalya et al., 2017)**. By consolidating information flows, MIS enables marketers to monitor campaigns continuously and access timely performance indicators that support the design of more effective marketing strategies. Organizations that successfully implement MIS typically experience greater decision accuracy and faster operational responses, outcomes that translate into higher marketing returns on investment **(Scherer & Schapke, 2011)**. In effect, MIS shifts marketing practice away from intuition-driven decisions toward a rigorously data-oriented discipline, where strategic choices are grounded in evidence rather than assumptions. Empirical research across different sectors suggests that firms adopting MIS-based solutions can realize increases of 40-45% in customer interaction levels and up to 30% improvements in operational performance compared with organizations that rely on conventional marketing approaches **(Romero & Vernadat, 2016; Lv & Li, 2021)**. By identifying customer behavior patterns and anticipating market needs, MIS supports the development of precisely targeted promotional initiatives and strengthens the agility of marketing operations in highly competitive digital environments **(Wang et al., 2016)**.

A particularly significant contribution of MIS in marketing is its role in enabling personalized consumer engagement. Through integrated data analytics, organizations can examine purchase histories, preference profiles, and customer responses to different communication channels, and then translate these insights into highly tailored marketing strategies **(Araujo et al., 2020)**. Current estimates suggest that roughly 68% of companies rely on MIS-generated analytics to segment their customer base and design customized offers. Such personalization is consistently associated with increased brand loyalty, higher conversion rates, and elevated customer satisfaction **(Perez-Vega et al., 2020)**. MIS also facilitates automated workflows, including lead tracking, audience segmentation, and content scheduling, which streamline marketing operations and reduce human error. As a result, marketing teams can focus more on strategic design while relying on MIS to handle repetitive and data-intensive tasks. At the same time, the link between MIS and broader business growth is becoming increasingly evident. Organizations that leverage MIS for analytics-driven marketing have been shown to achieve sales growth in the range of 20-25%, while cutting marketing expenditures by approximately 15% through more efficient resource allocation **(Stocchi et al., 2018)**. By embedding predictive analytics into MIS platforms, marketers can forecast demand, identify profitable customer niches, and continuously evaluate campaign performance. This systematic, evidence-based approach supports higher profitability and long-term brand resilience by grounding strategic planning in verifiable data rather than speculation **(Hanson et al., 2018)**.

However, the benefits of MIS and analytics are not distributed evenly across all types of organizations. Small and medium-sized enterprises (SMEs), in particular, often encounter persistent operational and technological barriers that limit their ability to adopt and exploit MIS fully. For approximately 55% of SMEs, the main challenges relate to inadequate access to

advanced digital tools, limited internal digital skills, and the high upfront costs associated with system acquisition and implementation **(Shanahan et al., 2018)**. Even so, evidence suggests that partial or incremental MIS adoption can still yield meaningful advantages. Basic modules focused on data storage, customer databases, and campaign tracking have been linked to 12-18% improvements in customer engagement indicators, demonstrating that even minimalist MIS configurations can support better marketing outcomes. As digital infrastructure continues to mature and training opportunities expand, MIS adoption among SMEs is expected to rise, narrowing the gap between large and smaller firms in terms of data-driven marketing capabilities **(Lou et al., 2019)**.

Against this backdrop, the present study investigates how MIS integration influences marketing performance, consumer engagement, and business growth through data analytics. Specifically, the research examines the extent of MIS adoption across firms of different sizes and evaluates how MIS-supported analytics shape consumer engagement practices and business development trajectories. By providing empirical evidence on the relationships among MIS integration, data analytics utilization, decision-making efficiency, and marketing outcomes, the study aims to clarify how organizations can leverage MIS-based insights to strengthen their competitive position in increasingly data-intensive markets. In doing so, it highlights the central role of MIS within the contemporary digital economy, where smart marketing depends on accurate data, real-time insights, and predictive analysis as key drivers of sustainable business success.

2. Materials and Methods

2.1 Research Design and Sampling

This study adopted a quantitative cross-sectional survey design to examine how Management Information Systems (MIS) integration influences marketing performance, consumer engagement, and business growth outcomes **(Kathuria et al., 2018)**. Data were collected from 155 marketing professionals, comprising 61 managers (39% of the sample), 47 executives (30%), and 47 analysts (30%), all employed in organizations operating across the retail, finance, IT, and manufacturing sectors. A stratified random sampling strategy was applied to ensure representation from firms of different sizes, resulting in a sample that included 38% small businesses, 42% medium-sized companies, and 20% large enterprises. This approach enabled systematic comparison of MIS implementation patterns across varied organizational structures and scales.

The survey was distributed electronically via email and professional networking platforms to reach geographically dispersed participants. All respondents provided informed consent prior to participation, and strict confidentiality protocols were followed to protect individual and organizational identities. By incorporating a heterogeneous sample spanning multiple industries, roles, and firm sizes, the study generated a dataset that captures diverse MIS adoption levels and analytics usage patterns, thereby enhancing the generalizability and suitability of the data for inferential statistical analysis.

2.2 Instrumentation and Measurement

The data collection instrument was a structured questionnaire designed to measure five core constructs: MIS Integration, Data Analytics Utilization, Consumer Engagement, Decision-Making Efficiency, and Business Growth. Each construct was operationalized through multiple items rated on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree") **(Nwankpa & Datta, 2017)**. In total, 30 items were included. Example statements were "MIS facilitates accurate marketing decision-making" and "Analytics improves customer retention and engagement." Content validity was established through expert review, which confirmed strong alignment between items and their corresponding theoretical constructs.

A pilot test with 20 marketing professionals was conducted to verify clarity and comprehensibility of the items and to assess response consistency. The final instrument demonstrated high internal reliability, with an overall Cronbach's α of 0.89 and subscale reliability coefficients ranging from 0.83 to 0.91, indicating strong measurement precision across all constructs **(Kitchens et al., 2018)**. The careful operationalization of MIS integration, analytics utilization, and outcome variables provided a robust basis for examining how varying levels of MIS and analytics adoption influence marketing performance in organizations of different sizes.

2.3 Analytical Techniques

Data analysis was conducted using SPSS version 26, following a structured analytic procedure to ensure interpretive rigor. Descriptive statistics (means, standard deviations, and frequency distributions) were first computed to summarize participant characteristics, organizational profiles, and MIS adoption status **(Akter & Wamba, 2016)**. Pearson correlation coefficients were then calculated to assess the bivariate relationships among MIS Integration, Data Analytics Utilization, Consumer Engagement, and Business Growth.

Multiple regression analysis was employed to evaluate the predictive effects of MIS integration and analytics utilization on business growth, with β coefficients, R^2 values, and associated p-values used to assess both the strength and statistical significance of these relationships **(Garg et al., 2020)**. Hierarchical regression models were estimated to test mediation effects, specifically examining whether data analytics utilization mediates the relationship between MIS integration and organizational growth. In addition, scatterplots, residual diagnostics, and mean comparisons were used as part of the data visualization and diagnostic process to detect potential anomalies and to examine overall pattern consistency. Statistical significance thresholds were set at $p = 0.05$ and $p = 0.01$ to ensure robust inference and to reduce the likelihood of Type I error **(Yi & Gong, 2012)**.

2.4 Validity Assessment

To evaluate the validity and robustness of the measurement model and dataset, several diagnostic tests were performed. The Kaiser Meyer Olkin (KMO) measure of sampling adequacy was 0.82, indicating that the data were well suited for factor analysis, while Bartlett's test of sphericity was significant ($p = 0.001$), confirming sufficient inter-item correlations **(Goni et al., 2020)**. Exploratory Factor Analysis (EFA) extracted five factors consistent with the theoretical constructs, with factor loadings ranging from 0.72 to 0.88, thereby supporting convergent validity **(Kim et**

al., 2016).

Multicollinearity was not a concern, as all Variance Inflation Factor (VIF) values were below 2.5. Skewness and kurtosis values for all variables fell within the ±1.0 range, indicating acceptable normality for parametric analyses **(Weiner et al., 2017)**. Missing data were minimal (less than 2% across items) and were handled using mean substitution at the variable level. Collectively, these diagnostics confirmed that the dataset met the assumptions required for the planned parametric procedures and provided a statistically sound foundation for deriving inferences regarding MIS adoption, analytics utilization, and business growth across diverse organizational contexts **(Clough et al., 2019)**.

3. Results

3.1 Respondent Characteristics by Role, Gender, and Firm Size

The study analyzed data from 155 marketing professionals to evaluate how organizations implement Management Information Systems (MIS) and utilize analytics to drive business expansion.

Table 1: Respondent Characteristics by Role, Gender, and Firm Size

Respondent Type	Category	Total Count	Percentage (%)
Role	Manager	61	39
	Executive	47	30
	Analyst	47	30
Organization	Small Firm	59	38
	Medium Firm	65	42
	Large Firm	31	20
Gender	Male	91	59
	Female	64	41

As shown in Table 1, respondents represented three key managerial and operational tiers: managers comprised 39% of the sample, executives accounted for 30%, and analysts represented the remaining 30%. These groups occupy central roles in strategic planning, campaign execution, and data-driven decision-making. The dataset also reflected a wide distribution of firm sizes, with 38% of participants employed in small businesses, 42% in medium-sized organizations, and 20% in large corporations.

Gender distribution revealed a relatively balanced workforce, with 59% men and 41% women participating in the study. Most respondents reported one to six years of experience working with MIS tools, indicating moderate to advanced familiarity with data-driven systems. Examining demographic and organizational characteristics allowed the study to assess how role category,

company size, and gender influence MIS adoption, analytics utilization, and marketing success. The diversity of the sample supports broad generalizability, enabling MIS impact findings to apply across varied professional roles, organizational scales, and demographic compositions.

3.2 Percentage of MIS Adoption Across Different Firm Sizes

MIS adoption rates varied significantly across firm sizes, reflecting differences in technological capability, financial resources, and organizational priorities. Overall, 78% of respondents indicated that their organizations rely on MIS to support marketing decisions and operational choices, as illustrated in below.

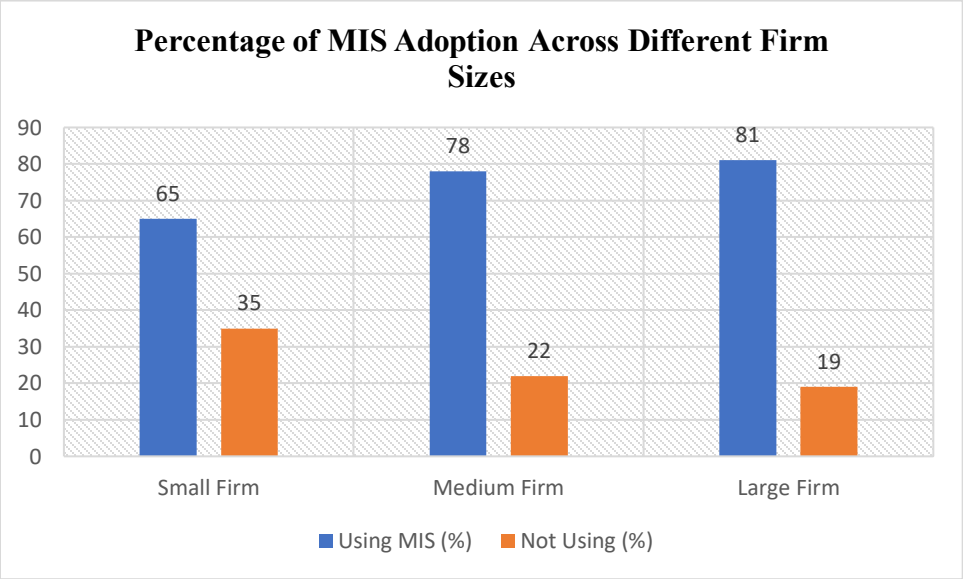

Figure 1: Percentage of MIS Adoption Across Different Firm Sizes

Large enterprises displayed the highest adoption rate at 81%, typically deploying fully integrated MIS environments combining CRM, ERP, and analytics platforms to enhance marketing performance. Medium-sized firms reported a 78% adoption rate and commonly used partial MIS solutions to improve decision-making accuracy and consumer engagement.

Small businesses showed a substantially lower adoption rate of 65%, reflecting constraints such as limited budgets, fewer technical staff, and restricted access to advanced digital infrastructure. Despite these barriers, MIS adoption among small firms still resulted in meaningful improvements, including faster reporting, better data tracking, and enhanced visibility into customer behavior. These findings demonstrate that organizational size strongly shapes MIS implementation patterns while highlighting the growing importance of MIS as a driver of marketing effectiveness and strategic decision-making across diverse business contexts **(Lin, 2013)**.

3.3 Adoption Percentages of Various Analytics Tools in Firms

Firms increasingly rely on analytics-driven tools to enhance marketing precision, optimize resource allocation, and improve customer targeting. Customer Relationship Management (CRM) systems emerged as the most widely adopted tool, reaching a 72% adoption rate. This reflects the

strong organizational emphasis on managing customer relationships and fostering long-term loyalty. Enterprise Resource Planning (ERP) systems followed with a 64% adoption rate, supporting the integration of operational, financial, and marketing activities, as shown in Figure 2.

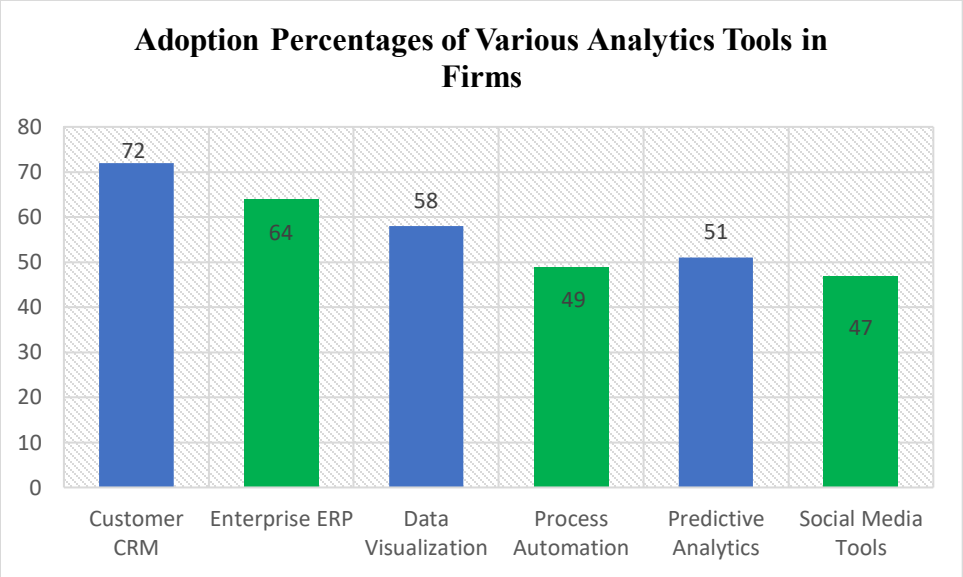

Figure 2: Adoption Percentages of Various Analytics Tools in Firms

Data visualization tools were utilized by 58% of respondents to convert raw datasets into actionable insights that guide strategic actions.

Adoption of predictive analytics tools reached 51%, while process automation tools were used by 49% of firms an indication that businesses are increasingly leveraging advanced technologies to strengthen predictive capabilities and streamline workflows. Social media analytics tools were implemented by 47% of organizations, demonstrating a growing focus on optimizing digital campaigns and improving audience targeting. Overall, the adoption patterns reveal that firms prioritize technologies that yield immediate strategic benefits but also encounter barriers such as cost, skill gaps, and system integration challenges. These results emphasize the expanding role of analytics in driving marketing effectiveness across organizational scales.

3.4 Consumer Engagement Metrics Correlated with MIS Adoption

The integration of MIS with analytics was associated with substantial gains in consumer engagement across all evaluated channels. Organizations that had adopted MIS reported marked improvements in website behavior, email interactions, social media responses, loyalty program participation, and personalized communication outcomes, as summarized in Table 2.

Table 2: Consumer Engagement Metrics Correlated with MIS Adoption

Engagement Metric	**Respondent Count**	**Percentage (%)**	**β-value**	**p-value**
Website Interaction	100	65	0.62	<0.01

Email Marketing	105	68	0.64	<0.01
Social Campaigns	95	61	0.61	<0.01
Loyalty Programs	88	57	0.58	<0.05
Chat Analytics	85	55	0.57	<0.05
Personalized Ads	107	69	0.66	<0.001

Website engagement showed notable progress, with 65% of respondents indicating higher interaction levels attributable to MIS-supported tracking and insight generation. Email marketing performance also improved, with 68% of participants reporting better open and response rates, largely driven by more accurate audience segmentation and targeted content delivery.

Social media campaigns exhibited a 61% improvement rate, suggesting that MIS-enabled analytics helped refine targeting, optimize posting strategies, and align content more closely with audience interests. Loyalty program participation rose to 57%, reflecting stronger customer retention and deeper relationship-building through structured, data-informed initiatives. The combination of chat-based analytics and personalized advertising metrics yielded engagement improvements of 55% and 69%, respectively, indicating that tailored communication strategies were highly effective in meeting customer expectations.

Regression analysis showed that these engagement outcomes were statistically significant at $p = 0.05$, with standardized beta coefficients ranging from 0.57 to 0.66 across the different metrics. These results demonstrate that MIS adoption provides organizations with the capability to monitor consumer behavior more precisely, refine campaign strategies, and implement proactive engagement approaches. In this way, business analytics, supported by MIS infrastructure, enables firms to design and execute marketing initiatives that enhance customer satisfaction, loyalty, and long-term relationship value **(Appelbaum et al., 2017)**.

3.5 Business Growth Metrics Influenced by MIS Integration

The examination of business growth indicators further confirmed the strategic value of MIS integration for organizational performance. Respondents reported improvements across multiple dimensions, including profit margins, customer acquisition rates, sales growth, return on investment (ROI), market share, and overall revenue. To provide a clearer picture of outcomes, the study categorized business development into six levels: no growth, very low growth, low growth, moderate growth, high growth, and very high growth, as presented in Table 3.

Table 3: Business Growth Outcomes with Detailed Categories

Growth Level	**Respondent Count**	**Percentage (%)**	**β-value**	**p-value**
No Growth	12	8	0.59	<0.01
Very Low Growth	18	12	0.60	<0.01

Low Growth	26	17	0.60	<0.01
Moderate Growth	34	22	0.61	<0.01
High Growth	32	21	0.62	<0.01
Very High Growth	33	20	0.63	<0.01

Among the 155 respondents, 8% reported no observable growth, 12% experienced very low growth, and 17% indicated low growth following MIS integration. In contrast, 22% of organizations achieved moderate growth, 21% reported high growth, and 20% experienced very high growth. This distribution shows that the majority of firms realized at least moderate gains, with a substantial portion achieving high or very high growth, thereby underscoring the positive impact of MIS-driven, analytics-based decision-making on business outcomes.

Regression results reinforced this pattern, indicating that MIS adoption significantly predicts business growth, with β values ranging from 0.59 to 0.63 and all corresponding p-values below 0.01. These coefficients point to a strong and statistically robust relationship between the use of MIS-integrated analytics and improved organizational performance. The findings suggest that firms that invest in MIS and embed analytics into their marketing processes are more likely to achieve superior operational efficiency, sustainable profitability, and enhanced competitive positioning. In practical terms, the integration of MIS into marketing operations functions as a catalyst for strategic growth, enabling organizations to move from reactive, intuition-based decision-making toward proactive, evidence-driven management that supports long-term market success.

4. Discussion

The findings of this study indicate that integrating Management Information Systems (MIS) has a substantial influence on marketing performance, consumer engagement, and business growth across organizations of all sizes. The demographic distribution 38% participants from small firms, 42% from medium-sized firms, and 20% from large corporations demonstrates a diverse representation of organizational structures **(Ying et al., 2020)**. The balanced participation of managers, executives, and analysts allowed the analysis to capture both strategic and operational perspectives, offering a comprehensive understanding of how MIS adoption varies by organizational role and scale. The patterns observed show that firm size and managerial position have a direct impact on MIS adoption levels, with larger organizations equipped with greater financial, structural, and technological resources achieving deeper MIS integration, while smaller firms tend to adopt only partial systems due to constraints in budget, staff capacity, and infrastructure **(Lyytinen & Damsgaard, 2011)**. Overall adoption rates followed a similar pattern, as 78% of respondents reported MIS use, with large organizations reaching 81% and small firms lagging at 65%. These trends underscore the importance of organizational resources, technological maturity, and strategic priorities in determining whether MIS adoption is successful **(Gholami et**

al., 2013).

Tool-specific adoption patterns further reinforce this interpretation. CRM systems had the highest adoption rate at 72%, followed by ERP systems at 64%, data visualization tools at 58%, predictive analytics at 51%, and social media analytics at 47%. These results indicate that organizations are more likely to adopt tools that deliver immediate operational and marketing benefits, while more advanced systems particularly predictive analytics and social media analytics are used less frequently due to their higher financial and technical requirements **(Boonstra, 2012)**. The data therefore suggest that while firms recognize the value of analytics, the complexity and cost of implementation continue to shape technology adoption decisions.

A strong relationship emerged between MIS implementation and consumer engagement outcomes. Organizations using analytics-enhanced MIS systems experienced improvements in website performance (65%), email marketing effectiveness (68%), social media interactions (61%), loyalty program participation (57%), chat analytics (55%), and targeted advertising (69%). Regression findings confirmed that these engagement metrics were significantly and positively associated with MIS adoption, with beta coefficients ranging from 0.57 to 0.66 and p-values below 0.05 **(Sharma et al., 2014)**. These results demonstrate that MIS-equipped organizations are better able to monitor customer behavior, refine targeting strategies, personalize content delivery, and maintain stronger customer relationships. The improvements observed suggest that MIS facilitates a transition from broad, intuition-driven marketing toward highly tailored engagement capable of sustaining customer satisfaction and long-term loyalty.

Business growth outcomes provide further evidence of MIS's strategic importance. Growth levels among respondents ranged from no growth (8%) to very high growth (20%), with the majority falling into the moderate-to-high categories: 22% moderate growth, 21% high growth, and 20% very high growth **(Kaur et al., 2020)**. These patterns reveal that MIS integration is strongly associated with enhanced organizational performance. Regression results supported this conclusion, showing that MIS is a significant predictor of business growth, with β-values between 0.59 and 0.63 and all p-values below 0.01. These findings align with previous research demonstrating that MIS-supported analytics directly improve profit margins, customer acquisition rates, sales outcomes, return on investment, market share, and revenue expansion **(Stocchi et al., 2018)**. The graded distribution of growth levels suggests that organizations achieving only modest improvements likely require deeper MIS integration and more advanced analytics capabilities to unlock higher performance potential **(Gajdošík, 2019)**.

Overall, the results position MIS as a strategic framework that extends well beyond conventional data management. MIS enables firms to transform raw information into actionable insights, improving operational decision-making, strengthening customer engagement, and accelerating business expansion. The consistently strong correlations, significant regression coefficients, and robust engagement and growth outcomes collectively demonstrate that MIS adoption plays a decisive role in determining marketing effectiveness and organizational success. Firms that strategically develop and integrate their MIS infrastructure are better equipped to make informed

decisions, craft high-impact marketing strategies, and pursue sustainable competitive advantage in increasingly data-driven markets.

5. Conclusion

The findings of this study confirm that the implementation of Management Information Systems (MIS) significantly enhances marketing performance, consumer engagement, and overall business growth. Organizations that integrate MIS and associated analytics tools achieve more efficient and evidence-based decision-making, which translates into higher levels of customer engagement and measurable gains in profit margins, sales volume, return on investment, market share, and total revenue. These outcomes show that MIS is not merely a supportive back-office system but a strategic driver of competitive advantage in modern marketing practice.

Although adoption patterns and impact levels varied by firm size, the results also indicate that even partial MIS implementation can yield meaningful benefits for smaller businesses, improving reporting capabilities, campaign monitoring, and customer insight generation despite resource constraints. Across all organizational categories, MIS-enabled analytics supported the development of proactive, data-driven marketing strategies that strengthened customer relationships and streamlined operational processes. Overall, the study underscores that systematic investment in MIS and analytics integration is essential for firms seeking to optimize marketing effectiveness, deepen consumer engagement, and sustain long-term business expansion in an increasingly data-intensive and competitive marketplace.

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Author Contribution

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A statement of conflicting interests

The authors declare that none of the work reported in this study could have been impacted by any known competing financial interests or personal relationships.

6. References

Akter, S., & Wamba, S. F. (2016). Big data analytics in E-commerce: a systematic review and

agenda for future research. Electronic Markets, 26(2), 173–194. https://doi.org/10.1007/s12525-016-0219-0

Appelbaum, D., Kogan, A., Vasarhelyi, M., & Yan, Z. (2017). Impact of business analytics and enterprise systems on managerial accounting. International Journal of Accounting Information Systems, 25, 29–44. https://doi.org/10.1016/j.accinf.2017.03.003

Araujo, T., Copulsky, J. R., Hayes, J. L., Kim, S. J., & Srivastava, J. (2020). From purchasing exposure to fostering engagement: Brand–Consumer experiences in the emerging computational advertising landscape. Journal of Advertising, 49(4), 428–445. https://doi.org/10.1080/00913367.2020.1795756

Boonstra, A. (2012). How do top managers support strategic information system projects and why do they sometimes withhold this support? International Journal of Project Management, 31(4), 498–512. https://doi.org/10.1016/j.ijproman.2012.09.013

Clough, B. A., Rowland, D. P., & Casey, L. M. (2019). Development of the eTAP-T: A measure of mental health professionals' attitudes and process towards e-interventions. Internet Interventions, 18, 100288. https://doi.org/10.1016/j.invent.2019.100288

Gajdošík, T. (2019). Big data Analytics in smart Tourism Destinations. A new tool for destination management organizations? In Springer proceedings in business and economics (pp. 15–33). https://doi.org/10.1007/978-3-030-03910-3_2

Garg, P., Gupta, B., Dzever, S., Sivarajah, U., & Kumar, V. (2020). Examining the Relationship between Social Media Analytics Practices and Business Performance in the Indian Retail and IT Industries: The Mediation Role of Customer Engagement. International Journal of Information Management, 52, 102069. https://doi.org/10.1016/j.ijinfomgt.2020.102069

Gholami, R., Sulaiman, A. B., Ramayah, T., & Molla, A. (2013). Senior managers' perception on green information systems (IS) adoption and environmental performance: Results from a field survey. Information & Management, 50(7), 431–438. https://doi.org/10.1016/j.im.2013.01.004

Goni, M. D., Naing, N. N., Hasan, H., Wan-Arfah, N., Deris, Z. Z., Arifin, W. N., Hussin, T. M. a. R., Abdulrahman, A. S., Baaba, A. A., & Arshad, M. R. (2020). Development and validation of knowledge, attitude and practice questionnaire for prevention of respiratory tract infections among Malaysian Hajj pilgrims. BMC Public Health, 20(1). https://doi.org/10.1186/s12889-020-8269-9

Hanson, S., Jiang, L., & Dahl, D. (2018). Enhancing consumer engagement in an online brand community via user reputation signals: a multi-method analysis. Journal of the Academy of Marketing Science, 47(2), 349–367. https://doi.org/10.1007/s11747-018-0617-2

Kathuria, A., Mann, A., Khuntia, J., Saldanha, T. J., & Kauffman, R. J. (2018). A strategic value appropriation path for cloud computing. Journal of Management Information Systems, 35(3), 740–775. https://doi.org/10.1080/07421222.2018.1481635

Kaur, J., Arora, V., & Bali, S. (2020). Influence of technological advances and change in marketing strategies using analytics in retail industry. International Journal of Systems Assurance Engineering and Management, 11(5), 953–961. https://doi.org/10.1007/s13198-020-01023-5

Kim, H., Ku, B., Kim, J. Y., Park, Y., & Park, Y. (2016). Confirmatory and exploratory factor analysis for validating the phlegm Pattern questionnaire for healthy subjects. Evidence-based Complementary and Alternative Medicine, 2016(1). https://doi.org/10.1155/2016/2696019

Kitchens, B., Dobolyi, D., Li, J., & Abbasi, A. (2018). Advanced Customer Analytics: Strategic value through integration of Relationship-Oriented Big Data. Journal of Management Information Systems, 35(2), 540–574. https://doi.org/10.1080/07421222.2018.1451957

Kousalya, G., Balakrishnan, P., & Raj, C. P. (2017). Stepping into the Digital Intelligence Era. In Computer communications and networks (pp. 1–22). https://doi.org/10.1007/978-3-319-56982-6_1

Lin, H. (2013). Understanding the determinants of electronic supply chain management system adoption: Using the technology–organization–environment framework. Technological Forecasting and Social Change, 86, 80–92. https://doi.org/10.1016/j.techfore.2013.09.001

Lou, C., Tan, S., & Chen, X. (2019). Investigating Consumer Engagement with Influencer- vs. Brand-Promoted Ads: The Roles of Source and Disclosure. Journal of Interactive Advertising, 19(3), 169–186. https://doi.org/10.1080/15252019.2019.1667928

Lv, X., & Li, M. (2021). Application and research of the intelligent management system based on internet of things technology in the era of big data. Mobile Information Systems, 2021, 1–6. https://doi.org/10.1155/2021/6515792

Lyytinen, K., & Damsgaard, J. (2011). Inter-organizational information systems adoption – a configuration analysis approach. European Journal of Information Systems, 20(5), 496–509. https://doi.org/10.1057/ejis.2010.71

Nwankpa, J. K., & Datta, P. (2017). Balancing exploration and exploitation of IT resources: the influence of Digital Business Intensity on perceived organizational performance. European Journal of Information Systems, 26(5), 469–488. https://doi.org/10.1057/s41303-017-0049-y

Perez-Vega, R., Kaartemo, V., Lages, C. R., Razavi, N. B., & Männistö, J. (2020). Reshaping the contexts of online customer engagement behavior via artificial intelligence: A conceptual framework. Journal of Business Research, 129, 902–910. https://doi.org/10.1016/j.jbusres.2020.11.002

Romero, D., & Vernadat, F. (2016). Enterprise information systems state of the art: Past, present and future trends. Computers in Industry, 79, 3–13. https://doi.org/10.1016/j.compind.2016.03.001

Scherer, R., & Schapke, S. (2011). A distributed multi-model-based Management Information System for simulation and decision-making on construction projects. Advanced Engineering Informatics, 25(4), 582–599. https://doi.org/10.1016/j.aei.2011.08.007

Shanahan, T., Tran, T. P., & Taylor, E. C. (2018). Getting to know you: Social media personalization as a means of enhancing brand loyalty and perceived quality. Journal of Retailing and Consumer Services, 47, 57–65. https://doi.org/10.1016/j.jretconser.2018.10.007

Sharma, R., Mithas, S., & Kankanhalli, A. (2014). Transforming decision-making processes: a research agenda for understanding the impact of business analytics on organisations. European Journal of Information Systems, 23(4), 433–441. https://doi.org/10.1057/ejis.2014.17

Stocchi, L., Michaelidou, N., Pourazad, N., & Micevski, M. (2018). The rules of engagement: how to motivate consumers to engage with branded mobile apps. Journal of Marketing Management, 34(13–14), 1196–1226. https://doi.org/10.1080/0267257x.2018.1544167

Wang, Y., Kung, L., & Byrd, T. A. (2016). Big data analytics: Understanding its capabilities and potential benefits for healthcare organizations. Technological Forecasting and Social Change, 126, 3–13. https://doi.org/10.1016/j.techfore.2015.12.019

Weiner, B. J., Lewis, C. C., Stanick, C., Powell, B. J., Dorsey, C. N., Clary, A. S., Boynton, M. H., & Halko, H. (2017). Psychometric assessment of three newly developed implementation outcome measures. Implementation Science, 12(1). https://doi.org/10.1186/s13012-017-0635-3

Yi, Y., & Gong, T. (2012). Customer value co-creation behavior: Scale development and validation. Journal of Business Research, 66(9), 1279–1284. https://doi.org/10.1016/j.jbusres.2012.02.026

Ying, S., Sindakis, S., Aggarwal, S., Chen, C., & Su, J. (2020). Managing big data in the retail industry of Singapore: Examining the impact on customer satisfaction and organizational performance. European Management Journal, 39(3), 390–400. https://doi.org/10.1016/j.emj.2020.04.001