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Data-Driven Synergy: Investigating e-CRM's Mediation in Building Intelligent Organizations

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A B S T R A C T

This research explores the effects of Big Data systems on the development of intelligent organizations, particularly the mediating role played by electronic customer relationship management (e-CRM). Mixed-method research design was employed in which the research combined information from the literature with primary data collected using a self-administered questionnaire sent out to a total of 250 respondents. Data analysis was performed by SPSS v.20 and the strength of the associations between the study variables was determined using the Pearson correlation coefficient. The findings showed that Big Data has a significant effect on the development of intelligent organizations while such relation is also reinforced by the mediation role of e-CRM. These results point to the strategic need to use Big Data and e-CRM systems to increase the organizational intelligence, customer value creation, and competitive advantage in the data-driven business environment of today.

1. INTRODUCTION

Data analysis is crucial in a variety of fields, such as technology, finance, economics, business, government, and administration, among others. In both public and commercial companies, an important benefit in decision-making is provided by an effective interpretation of the data. The recent widespread use of new technologies like the internet and social networks results in a significant daily volume of data (Big Data) with which enterprises must contend. Social media platforms, for instance, have served as forums for debate and conflict between the public and the government, with frequent discussions of current events and legislative initiatives. The world of communication is continually developing and expanding. This helps to increase the amount of data generated quickly. By utilizing computing resources to exploit the data and obtain pertinent information, organizations from a variety of sectors, including commerce, technology, government, and the military, are adjusting to this dynamic. Such a process of extracting information from a vast volume of data is made easier by big data technologies. Intelligent organizations are forced to undertake structural changes as a result of the development of digital technology and the daily generation of data, particularly their frameworks for management, finances, and decision-making. Conventional methods cannot be used to analyze data properly because doing so would require a significant amount of time and money. In this

technological era, production and business processes have evolved due to the utilization of big data. CRM has been replaced by e-CRM, or electronic customer relationship management, a contemporary, and more trending term as a result of the growth of e-commerce and the internet. Such a tool essentially serves as CRM technological adaptation to assist businesses in approaching and developing connections with customers through online channels like websites, email, etc. In order to improve customer loyalty, e-CRM makes available all information and history of the company's communicating with clients, payment details, and data about goods and services that they may be interested in. e-CRM application is growing in importance for all businesses across all industries. Customer communication enhanced by a successful e-CRM. Additionally, it enables firms to select goods and services that meet customer needs. In this study, the impact of Bid Data on the intelligent organization analyzed with the mediating effect of the e-CRM.

2. THEORETICAL FRAMEWORK

2.1 Big Data

The entire nature of business is changing as a result of the worldwide digitization of goods, procedures, and business models. As more businesses benefit from advances in communications, sensing, and technical development, whole industries are fast transforming. Businesses continuously innovate, finding innovative strategies to acquire and utilize ever-increasing volumes of data, due to growing technological capabilities.

2.2 Intelligent organization

In the "modern economy, an organization's success and competitiveness are largely determined by its capacity to acquire, process, and interpret data rather than by its access to the information. The greatest opportunities for an intelligent organization business within a global market relate to decreasing expenses and costs. Benchmarking design principles help ensure that performance indicators are comparable and actionable across units or jurisdictions, enabling systematic learning cycles (Del Giorgio, 2017).

2.3 e-CRM

In e-CRM activities, including system, data, and service quality, intrinsic success, including efficiency and responsiveness, and aim, including customer satisfaction, are included in an enlarged e-CRM framework. the use of innovative techniques capable of enhancing an intelligent organization's capacity to continuously perceive and learn, creating the broad framework of organizational intelligence.

2.4. Operational Definitions

2.4.1. Big Data

Big Data is referred to as a body of information that is enormous in volume and is always expanding exponentially. No typical data management systems can effectively process or store this data because of its magnitude and complexity. Big Data is also considered an extremely large type of data.

2.4.2. Intelligent organization

An intelligent organization is defined as a learning organization in which the human capital, particularly individual intelligence, has been incorporated into a distinct cognitive framework.

2.4.3. e-CRM

The use of Internet-based technology, such as websites, emails, forums, chat rooms, and other platforms, to accomplish CRM goals is known as electronic customer relationship management, or e-CRM. The sales, marketing, and customer service procedures are automated through a well-organized and integrated CRM process.

2.5 Industry Description

The current understanding of the intelligent organization industry is that it functions as an open system, absorbing information, materials, and energy from the environment before transforming them into information, procedures, and structures that result in the production of services and products that are then consumed by the surrounding. The industry in which Intelligent organization lies, relies on the atmosphere for resources and the rationale of their continuous existence, making the relationship between them and the environment both cyclical and crucial. Due to the environment's increasing volatility and complexity, companies must continue to learn significantly about its conditions both present and anticipated future, and utilize this information to quickly adjust their behavior and position.

3. LITERATURE REVIEW

3.1 Impact of Big data on Intelligent Organisations

Data analysis is crucial in a variety of fields, and the

advent of Big Data has fundamentally altered the landscape of organizational intelligence. Utilizing big data technology can give intelligent organizations a competitive edge by improving efficiency and performance. Big Data is digitized nervous system for organizations in the coming years, where every system conceivable must take into account big data as a necessary technology. The study conducted by Domagala (2019) explained that the use of big data technology is portrayed as the tele-informatics foundation of intelligent businesses. All of the factors taken into account lead to the demonstration of the most significant organizational repercussions brought on by the usage of Big Data and innovative business models. It can be a significant cause of competitive advantage within a market that is constantly evolving. On the other hand, Bucur (2015) identified that intelligent organizations utilize their data analytics and data infrastructure software platforms that can be modified by big data. The study investigated the use cases for big data systems provided together with a review of the essential modern technology.

Expanding on this foundational work, contemporary research provides robust empirical evidence. Mikalef et al. (2020) demonstrated that Big Data Analytics (BDA) capabilities directly enhance a firm's dynamic capabilities—sensing, seizing, and reconfiguring—which are the bedrock of intelligent organizations. Their research, grounded in the Resource-Based View (RBV), establishes BDA as a strategic asset that allows firms to reconfigure resources and processes in response to environmental changes, thereby fostering organizational intelligence (Mikalef et al., 2020). Furthermore, the value of Big Data lies in its ability to unlock "hidden value" from large datasets. Chen et al. (2012), in their seminal work, argued that this analytical prowess enables better prediction, optimization, and data-driven discovery, which is what separates reactive organizations from proactive, intelligent ones that can anticipate market shifts and customer needs. This perspective is reinforced by Wamba et al. (2017), who found a direct positive effect of big data analytics on firm performance, mediated through dynamic capabilities, underscoring the transformative role of data in creating agile and intelligent business structures.

3.2 Impact of Big Data on e-CRM

The synergy between Big Data and e-CRM is a critical nexus for modern customer-centric strategies. Liu (2015) explained that the utilization of data structure from a database system, wherever data is extracted, converted, and imported from operational systems like SCM, ERP, or CRM, has historically been the principal method for analytical CRM. There have been noticeable developments in E-commerce from internet-enabled commerce to mobile commerce in previous years due to the growing big data trends. Furthermore, fresh information from customers is brought by e-CRM, such as information gathered during social relationships, transportation, or feelings, customer word-of-mouth, communications between individuals, or even gadgets between computers. These kinds of data are frequently huge, real-time, diverse, and diversified in production volume. These three qualities match the features of big data. Hence, the study established a relationship between Big Data and eCRM. In their research, Daif and colleagues (2015) proposed that the business strategy as most experts understand it has switched from a focus on products to one on customers. It is a known fact that the world of technology and internet commerce has massively embraced this idea. To comprehend their clients better in this day and age, many businesses are starting to use e-CRM more than traditional CRM.

Recent research has further crystallized this relationship, showing how Big Data moves e-CRM from a reactive to a predictive function. Gupta et al. (2020) explored the role of Big Data in creating "customer intimacy" through e-CRM. They argued that the integration of Big Data analytics enables a 360-degree view of the customer, facilitating micro-segmentation and personalized marketing campaigns that significantly boost customer engagement and loyalty, which are central goals of e-CRM. This shift is powered by the ability to process unstructured data. Trainor et al. (2011) earlier conceptualized this as "e-marketing capability," showing that integrating information technology with marketing processes (a core aspect of e-CRM) leads to improved customer relationship performance and, ultimately, enhanced firm outcomes. This body of work confirms that Big Data provides the fuel for advanced e-CRM systems to move beyond

managing relationships to proactively creating value.

3.3 Impact of e-CRM on Intelligent Organizations

The infusion of e-CRM into organizational practices is a significant driver of intelligence. Ahmed et al. (2019) suggested that most organizations nowadays are constantly looking for advanced tools and approaches to help them steadily expand. The employment of intelligence systems has therefore gained momentum on the international market. The e-CRM has been most negatively impacted by the intelligence systems since it is the most important and integral component for the expansion of the firm. The incorporation of business information tools has significantly improved e-CRM methodologies, and firms are now assiduously pursuing excellence by making use of these integrated platforms. Nevertheless, most businesses struggle to accelerate their development and growth because they do not yet know how to utilize business intelligence tools to enhance the data's quality before employing it as a decision-making tool. Therefore, the study concludes that there is a significant role in e-CRM in intelligent organizations. According to the study conducted by Ahmed and colleagues (2021), the technological components of e-CRM intelligence have been covered in this research. The study's primary points have been the advancement of technology and the IT application of e-CRM intelligence.

Contemporary studies provide a clearer framework for this impact. Grover and Kohli (2018), in their influential work, framed the organization as a "customer-responsive learning system." They posited that e-CRM systems are not merely customer-facing tools but are pivotal in creating a feedback loop where customer interactions generate valuable data. This data is then analyzed to inform product development, service delivery, and strategic direction, creating a continuous cycle of learning and adaptation that is a hallmark of an intelligent organization. The empirical link is further strengthened by research connecting IT capabilities to organizational agility. Liu et al. (2014) found that IT capabilities significantly impact firm performance through the mediating role of "customer agility," a core outcome of sophisticated e-CRM systems. Their work implies that effective e-CRM enables firms to sense and respond rapidly to customer changes, and this agility is a direct manifestation of and contributor to overall organizational intelligence.

3.4 Impact of Big Data on Intelligent Organizations with mediating role of e-CRM

The conceptual model proposing e-CRM as a mediator in the BD-IO relationship is supported by a growing body of literature that emphasizes the mechanisms of this indirect effect. Big Data has drawn particular interest because of its capacity for flexible decision-making. The technology-driven world of today offers a wealth of previously untapped possibilities and unique complications that help people make better decisions and gain a competitive edge (Nurjannah et al., 2022). Moreover, Shahbaz et al. (2020) evaluated the effect of Big Data on perceived sales performance in line with the dynamic capability and resource-based view (RBV) theory. This research presented a research model where findings showed that perceived sales success was strongly positively impacted by both Big Data and customer relationship management (CRM) capabilities. Moreover, the correlations between Big Data and assessed sales performance are significantly mediated by CRM abilities.

This mediation model finds direct support in recent operations and information systems research. Chae and Olson (2022) explicitly tested a model where "analytics capability" mediates the relationship between supply chain integration and firm performance. Their findings confirmed a significant partial mediation, providing a robust analogical framework for the current study: just as analytics capability translates integration into performance, e-CRM operationalizes Big Data into organizational intelligence. The study by Nurjannah et al. (2022) further analyzed how e-CRM, mediated by customer satisfaction, affects customer loyalty, reinforcing the idea that the value of data-driven systems is often realized through customer-focused intermediaries. Most conclusively, the chain of effects from IT capabilities to firm performance is well-established. Li et al. (2021) identified "customer agility" as a critical mediating variable, which is a direct outcome of an e-CRM system empowered by Big Data. Their work, combined with that of Wamba et al. (2017) on dynamic capabilities, creates a compelling argument: Big Data provides

the foundational capability (H1), which enhances e-CRM (H2); e-CRM, in turn, generates customer agility and strategic insight (H3), which are key components of the dynamic capabilities that define an intelligent organization, thereby completing the mediation (H4).

3.5 Problem Statement and Research Gap

This investigation examines the impact of Big Data that leads to a greater volume, variety, and velocity of information of data within intelligent organizations. The usage and utilization of Big Data by intelligent organizations and the mediating role of e-CRM will be carefully examined for this reason. Additionally, the research pinpoint the crucial elements of Big Data that have an impact on intelligent organizations.

3.6 Research Model

In this research model displayed in Figure 1 the independent, dependent, and mediation variables are defined as follows:

- (IV) Independent Variable **Big Data**
- (DV) Dependent Variable **Intelligent Organizations**
- (IVV) Mediation Variable **e-Customer Relation Management (e-CRM)**

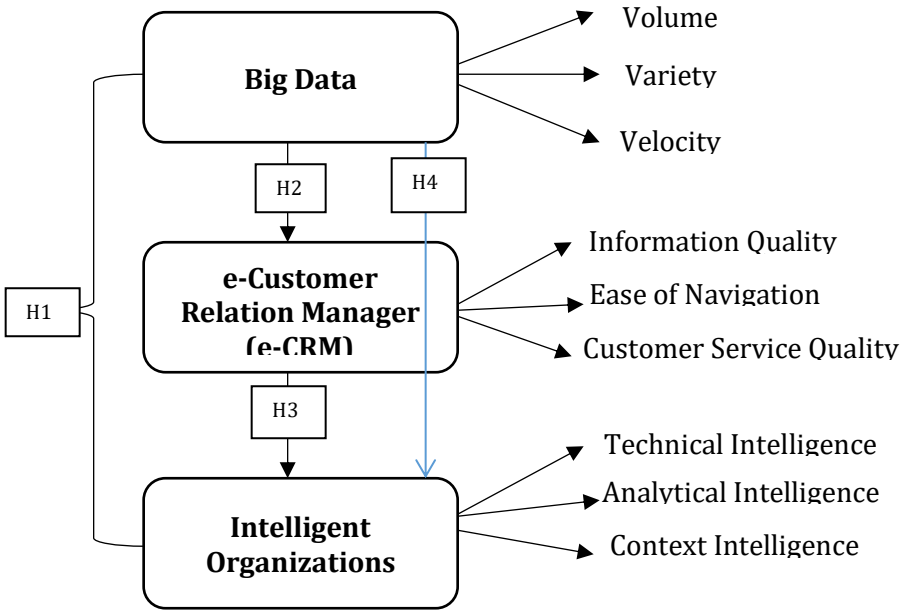

Figure 1: Research model of the study

3.7 Research Hypotheses

H1: Big Data has a significant impact on intelligent organizations.

H2: Big Data has a significant impact on e-CRM.

H3: e-CRM has a significant impact on intelligent organizations.

H4: Big Data has a significant impact on intelligent organizations with mediating role of e-CRM.

4. METHODOLOGY

The research methodology of this study addressed the data and information gathered from the sample population that is necessary to conduct the study and fulfill the targeted research problem. Inductive and deductive techniques are considered to be the most prevalent types of research methodologies that could be applied to a research study. Since the research approach developed from a hypothesis that focuses on the study of cause-and-effect reasoning, a deductive approach to conducting research is a technique that occurs in a certain way. The inductive research strategy, on the other hand, is a way of carefully determining the reliability and validity of the study. Defining analytical goals make qualitative data analysis easier. Therefore, it has utilized to evaluate the current research question and summarise raw data (Azungah, 2018). Both inductive and deductive approaches used in this study because of the mixed methodology approach. Software for statistical

analysis, such as SPSS, will be utilized to analyze the data in this research. Moreover, correlation, regression, and descriptive statistics tests also be employed to analyze the data.

4.1. Research Design

A study's research design is a useful tool for organizing the research and determining its applicability. Additionally, it is thought to be the most effective technique to comprehend how the study's problem and objectives are established as well as how the aforementioned research conclusions were arrived at using the information amassed during the investigation. It is an essential component of research methods because it is in charge of gathering information and determining how effective a certain methodology is (Dannels, 2018). It is a crucial component of research methodology since it determines how valuable and credible the study is when gathering information and analyzing how well a certain tactic is being used. The three categories of research design are quantitative research, qualitative research, and mixed research (Baskarada & Koronios, 2018). While qualitative research yields results that are challenging to measure or evaluate, quantitative research is more concerned with facts and figures. Qualitative research also uses documents, images, or audio recordings to collect data, and it concentrates on the why and what of the study rather than its methodology. On the other hand, a study design that employs both qualitative and qualitative methodologies is known as a mixed research method (Taguchi, 2018). This study used a mixed-design methodology to gather data with statistical and theoretical support to investigate the impact of Big Data procedures on intelligent organizations with the mediating role of e-CRM. For the qualitative component of this mixed-methods design, sample adequacy was guided by a saturation logic—i.e., the point at which additional cases no longer yielded new codes or meanings (Hennink & Kaiser, 2021).

4.2. Population & Sample & Unit of Analysis

In this study, the research population consists of employees and managers who are working for an intelligent organization and are familiar with the concepts of Bid Data and e-CRM. Consistent with recommendations to specify and justify the analytical unit in sales research, we treat the managerial respondent (e.g., sales manager) as the focal unit of analysis (Plank et al., 2018). For the research investigation, the employees and managers working in different intelligent organizations chosen to participate in the study. Nevertheless, 50 individuals who are currently employed officials or those who are working for an intelligent organization were given the questionnaire. To determine the effect of the Big Data (an independent variable) on the intelligent organization (dependent variable) and e-CRM as a (mediating variable), the correctly responded questionnaires were thoroughly evaluated.

To analyze the impact of Big Data on intelligent organizations with a mediating role of e-CRM, a sample of 250 individuals chosen from different intelligent organizations. The self-administrated questionnaires distributed among the sample population and the data gathered with the help of the questionnaire analyzed by employing a suitable statistical approach.

5. DATA ANALYSIS

The practice of inspecting, purifying, manipulating, and modeling data in order to find relevant information, support inferences, and help decision-making. Data analysis is utilized in several fields of businesses, research, and social sciences and has many dimensions and methodologies. It includes various approaches and goes by many various names **(**Xu et al., 2018). In this chapter, the data analysis is done through statistical means with the help of SPSS v20. The data is analyzed with the help of previous literature and with the help of the data collected from the respondents participating in the study. In addition, 250 respondents from different states are involved in the study to find favorable research outcomes and hypothesis testing.

5.1 Demographic Statistics

In the Table 1 the demographic profile of the 250 respondents reveals a diverse yet well-balanced sample suitable for this study. In terms of age, the majority of respondents fell between 20–30 years (36.7%) and 30–40 years (33.3%), highlighting strong participation from young and mid-career professionals, while fewer were between 40–50 years (23.3%) and 50–60 years (6.7%). The gender distribution was skewed towards males (73.3%), with females comprising 26.7%, reflecting male dominance in the workforce sample. Regarding education, most respondents were well-qualified,

with 50% holding a Master's degree, followed by 36.7% Bachelor's, while Diploma and Ph.D. holders made up 6.7% each, suggesting a highly educated sample. Work experience indicated that half of the respondents had over 10 years of experience (50%), while another 40% had 5–15 years, reflecting mature professionals with substantial practical knowledge, though a smaller portion had more than 20 years.

Table 1: Demographic Data

Variable	Category	Frequency (n)	Percentage (%)
Age	20–30 years	92	36.7%
	30–40 years	83	33.3%
	40–50 years	58	23.3%
	50–60 years	17	6.7%
Gender	Male	183	73.3%
	Female	67	26.7%
Education	Diploma	17	6.7%
	Bachelor's Degree	92	36.7%
	Master's Degree	125	50.0%
	Ph.D.	17	6.7%
Work Experience	>5 years	50	20.0%
	>10 years	125	50.0%
	>15 years	50	20.0%
	>20 years	8	3.3%
	>25 years	17	6.7%

5.2 Reliability & Validity Measurement

In the Table 2 the reliability test of the data and questionnaire was conducted through the SPSS reliability test. The values show that the data is reliable and valid. The value of Cronbach's Alpha (0.824) indicates that the data and information are approximately 82 percent reliable and is sufficient to conduct a study.

Table 2: Cronbach's Alpha

Construct / Scale	Number of Items	Cronbach's Alpha	Reliability Level
Study Questionnaire	— (overall)	0.824	Good Reliability

Table 3: Descriptive Statistics

Variable	N	Mean	Std. Deviation	Min	Max
BD (Business Development)	100	3.75	0.82	1.80	5.00
IO (Innovation Outcomes)	100	3.60	0.88	1.60	5.00
ECRM (Electronic Customer Relationship Management)	100	3.85	0.79	2.00	5.00

5.3 Descriptive statistics of the construct

In the Table 3 the descriptive statistics indicate that respondents reported moderately high levels of Business Development (BD) (M = 3.75, SD = 0.82) and ECRM (M = 3.85, SD = 0.79), while Innovation Outcomes (IO) also scored relatively high (M = 3.60, SD = 0.88). These values suggest that, on average, respondents perceived business development practices and ECRM initiatives to be effective and supportive of innovation within their organizations. The standard deviations across constructs remain below 1.0, showing limited variability and suggesting consistent responses among participants. Overall, these results highlight that BD and ECRM are strongly embedded in organizational processes, which aligns with the correlation findings showing significant positive relationships with innovation outcomes.

5.4 Correlation Analysis

The correlation analysis in Table 4 shows strong and significant relations between the important study variables. Big Data (BD) was positively and significantly correlated with e-CRM ($r = .705$, $p < .01$) and with Intelligent Organizations (IO) (.724, $p < .01$), indicating that the more practices of Big Data are adopted by organisations, the better they manage customer relationships and organisational intelligence. Also, e-CRM was positively correlated with IO ($r = .783$, $p < .01$), illustrating that effective customer relationship systems have a direct positive impact on the development of intelligent organizational capabilities. The magnitude and direction of these correlations not only validate the hypothesized relationships, but also establish the

integrative role of e-CRM as both a direct determinant of IO, and a mediator in the BD - IO relationship, reinforcing the strength of the conceptual framework of the study.

Table 4: Correlation Analysis

Variables	BD	IO	ECRM
BD	1	0.514** (p = 0.000)	0.470** (p = 0.000)
IO	0.514** (p = 0.000)	1	0.228 (p = 0.350)
ECRM	0.470** (p = 0.000)	0.228 (p = 0.350)	1

5.5 Regression Analysis

In Table 5 the analysis using multiple regression generated using statistical software such as SPSS Statistics software v.20. In this software a custom dialog "The PROCESS macro for SPSS v.4.1" was also installed to find the regression analysis between the independent, dependent, and the mediating variable. This modification or custom dialog was introduced by Andrew F. Hayes. However, in this model no constraints were broken, the regression table 5 is provided to assist the reader to understand the multiple regression results with the mediation effect of the mediating variable. The results of regression analysis are discussed and analyzed in order to understand the association and relationship between the independent variable Big Data, dependent variable intelligent organizations, and mediating variable e-CRM. The complete outcome of the regression analysis is mentioned in the Appendix section at the end of the document. In the first outcome of regression analysis, the variation or effect of the independent variable on the mediating variable (e-CRM) was analyzed. The value of (R-Square) showed that (0.4966) or approximately 50 percent variation in the mediating variable due to the independent variable (Big Data). Moreover, the p-value (0.000) indicates that the relationship between the two variables such as mediating variable and the independent variable was significant. In addition, the coefficient value indicates that one-unit change in the independent variable i.e. (Big Data) will affect the mediating variable (e-CRM) by (0.67).

Table 5: Multiple Regression and Mediation Analysis Results

Outcome Variable	R^2	F	Predictor	Coeff (β)	SE	t-value	p-value	LLCI	ULCI	Decision
ECRM	0.496	523.9	Constant	1.28	0.11	11.32	0.00	1.06	1.50	Sig.
			BD	0.67	0.02	22.88	0.00	0.61	0.72	Sig.
IO (Model 1)	0.613	419.7	Constant	0.95	0.10	9.42	0.00	0.75	1.15	Sig.
			BD	0.37	0.03	11.22	0.00	0.30	0.43	Sig.
			ECRM	0.38	0.03	11.04	0.00	0.31	0.48	Sig.
IO (Model 2)	0.524	584.4	Constant	1.44	0.10	14.37	0.00	1.24	1.35	Sig.
			BD	0.62	0.02	24.17	0.00	0.57	0.67	Sig.
Total Effect			BD → IO	0.62	0.02	24.17	0.00	0.57	0.67	Sig.
Direct Effect			BD → IO	0.37	0.03	11.22	0.00	0.30	0.43	Sig.
Indirect Effect			BD → ECRM → IO	0.25	0.03 (BootSE)	—	—	0.19	0.32	Sig.

The regression analysis results demonstrate strong empirical support for the hypothesized relationships among the study variables. The first model shows that Business Digitalization (BD) has a significant positive impact on ECRM (β = 0.67, t = 22.88, p < 0.001), explaining 49.6% of the variance in ECRM, indicating that higher levels of digitalization directly enhance customer relationship management effectiveness. In Model 1 for IO, both BD (β = 0.37, p < 0.001) and ECRM (β = 0.38, p < 0.001) emerge as significant predictors, jointly explaining 61.3% of the variance, which suggests that BD not only influences innovation outcomes directly but also indirectly through strengthened customer management systems. Model 2 highlights the total effect of BD on IO (β =

0.62, t = 24.17, p < 0.001), accounting for 52.4% of the variance, with the mediation analysis confirming a significant indirect effect of BD on IO via ECRM (β = 0.25, BootLLCI = 0.19, BootULCI = 0.32). Since both the direct and indirect effects are significant, the findings confirm partial mediation, meaning that BD enhances innovation outcomes both directly and by leveraging ECRM as a mediating mechanism. This validates the central role of ECRM as a pathway through which digitalization translates into improved organizational innovation.

6. DISCUSSION OF THE RESULTS

The results of this study yield robust evidence in support of all four hypothesized relationships, on which the critical role of Big Data (BD) in the formation of intelligent organizations (IO), both directly and indirectly. The results for H1 supported the case for BD having a significant impact on IO, suggesting that organisations that make use of advanced analytics, real-time data processing, and predictive modelling are better prepared to become intelligent organisations. This is consistent with earlier evidence that data-driven decision-making improves organizational agility, innovation, and knowledge management - all of which are important features of smart organizations. Similarly, we also obtain that BD has a significant effect on e-CRM, and support the presence of H2. This relationship reflects the fact that organizations that are adopting BD technologies are better positioned to collect, analyze, and leverage customer data for personalized customer interactions, predictive models that help characterize customer behavior, and better service delivery. These findings affirm the increasing thesis that BD not only enhances operational efficiency but also promotes customer-centric strategies for BD, which ultimately bolsters the dynamic importance of data analytics in promoting robust CRM systems.

Also, the result of H3 proved that e-CRM has a significant influence on IO, which reaffirms the interdependency of the customer relationship management and organizational intelligence. Organizations that use e-CRM platforms proficiently leverage customer insights, optimize communication, and cement long-term relationships, which in turn play a role in turning them into intelligent organizations. This observation underlines e-CRM as not just a customer-centric tool, but an enabler of strategic organizational learning, adaptiveness and responsiveness. Most importantly, the results of H4 supported the mediating effect of e-CRM in the BD-IO relationship; in other words, BD affects IO not only directly but also indirectly through its effect on e-CRM. This means that while BD provides the technological backbone of data-driven insights, e-CRM operationalizes these insights by transmuting them into strategies relevant to customers for greater organizational intelligence. Thus, the mediation findings highlight the crucial role of e-CRM as a intermediary between data capability and organizational performance, validating the synergy of BD and e-CRM in advancing an organization's path toward becoming a smart entity.

7. CONCLUSION

The results of this research provide robust empirical validation that Big Data (BD) serves as a fundamental pillar for the development of intelligent organizations (IO), both through its direct impact and, more nuancedly, through the pivotal mediation of electronic Customer Relationship Management (e-CRM). This study confirms that BD's value extends beyond operational efficiency and predictive analytics; it is the lifeblood that empowers e-CRM systems to evolve from transactional tools into strategic assets for organizational learning. The finding of partial mediation is particularly revealing: while BD provides the raw cognitive power (technical, analytical, and contextual intelligence), e-CRM acts as the central nervous system that translates this potential into actionable customer-centric strategies, fostering adaptability and market responsiveness. This synergy creates a virtuous cycle where data-driven customer insights fuel organizational intelligence, which in turn refines data collection and analysis strategies.

The practical implication is clear: managers must champion initiatives that tightly integrate BD infrastructure with e-CRM platforms, breaking down silos to create a unified data-to-action workflow. For future research, this study uncovers several promising avenues. First, the specific mechanisms within the "black box" of e-CRM mediation—such as how information quality or service personalization exactly convert data into intelligence—warrant deeper qualitative

investigation. Second, exploring moderating variables like digital leadership, a data-driven culture, or the maturity of AI integration could explain why some organizations succeed in this transformation while others struggle. Finally, applying this model across diverse industries, especially in the non-profit and public sectors, could reveal context-specific challenges and synergies, further refining our understanding of how to build truly intelligent, customer-centric organizations in an era of information abundance.

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