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The Impact of Internet of Things (IOT) on Information Management Practices

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Abstract: This research examines the impact of the Internet of Things (IoT) on Information Management (IM) across various sectors, including manufacturing, healthcare, logistics, and IT. The study employs both quantitative and qualitative research methods, utilizing a mixed-methods approach. Random sampling was not used, as the research targets specific organizations that have implemented IoT solutions for more than one year. Primary data is analyzed quantitatively and supplemented with descriptive and inferential statistics, as well as correlation and regression analyses, to explore the relationship between the independent variable (IoT adoption) and the dependent variable (IM performance). The research identifies challenges and benefits of IoT through thematic analysis of qualitative data. Impact assessments reveal that IoT significantly enhances data collection efficiency, with an efficiency rate of 0.54; storage efficiency at a rate of 0.68; real-time analytics scoring 0.76; and an overall organizational satisfaction rate of 0.73. However, the study also highlights existing challenges related to current digital infrastructure, particularly concerning data security and system compatibility. This research contributes to the existing literature by enhancing our understanding of IoT and its role in reshaping IM practices. It underscores the importance of pragmatic data protection guidelines and encourages organizations to prioritize IoT integration solutions to enhance efficiency. It is recommended that organizations focus on improving their storage infrastructure and addressing security vulnerabilities to further increase efficiency and satisfaction levels with their IoT systems.

Keywords: Data Security, Interoperability, IoT Adoption, Privacy Compliance, Real-Time Analytics.

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INTRODUCTION

The advancement in technology has led to the emergence of Internet of Things (IoT) making different fields to change by allowing connection, control and real-time data sharing in devices. Internet of things is defined as a group of interconnected objects which are capable of exchanging information they have without the interference of human beings and has received much attention due to its ability to transform information management practices (Vermesan et al., 2020). In recent years with increasing amount of data being generated through various internal and external sources, the IoT plays a significant part in efficient management of data that is collected, processed and disseminated within an organization. This manuscript reviews and discusses views on IoT and its effects on today's information management practices: challenges, discrepancy, and opportunities (Secundo et al., 2021).

Knowledge dissemination plays a significant role in organizational performance of companies that desire to enhance on competitive advantage particularly in decision making and operations (Arsawan et al., 2022). In the past Information management was handled manually whereby data was collected, stored and analyzed manually. As a result of advance in IoT, such processes are enabled in real time and make the handling of data more accurate and efficient (Adi et al., 2020). IoT devices produce enormous data from different aspects and if well analyzed it has the potential to enhance business intelligence, decision making and resource utilization. But nevertheless, the integration of IoT in information management is not an easy task which comes with some difficulties. The number of connected devices has rapidly increased thus causing whats known as data explosion, which hampers organizations ability to properly process and put to use the data (Malhotra et al., 2021). This has led to a situation where entirely new frameworks and technologies have been called for in order to handle, store and analyse the data generated by IoT. For example, cloud computing and edge computing have been significantly considered as the

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critical technologies in managing the big data, real-time process, and minimizing the latency in the information system (Hamdan et al., 2020).

Existing literature on IoT and information management practices constitutes a number of domains among which are data analytics, cloud computing, security and privacy (Rani et al. , 2023). The one that was described in great details regards IoT's ability to advance information management and its accuracy, including its real-time capabilities and readiness for analysis. Internet of Things, Smart Sensors, RFID and connected devices enable the automatically collecting and feeding data to the organizations that enables them to monitor and enhance processes continuously (Costa et al., 2021). Nevertheless, there is still an expectation of a number of issues in the implementation of IoT as part of information management. Privacy and security issues are the major issues with the large amount of connected devices making it more open to various cyber-attacks (Tawalbeh et al., 2020). Also, integration between various IoT systems in the same environment is another challenge since most IoT devices are non-standardized this makes it challenging to employ multiple data feed from the various sources (Younan et al. , 2020). As said earlier, to avoid complications in the process of analyses and reporting, several researchers have formulated the following frameworks. For instance, Awotunde et al (2022) proposed a cloud-based IoT framework that optimised the management of collected data by minimizing the level of system integration. Likewise, Carvalho et al., (2021) noted that edge computing enhances the processing rate of data and minimizes delay especially for real-time services. That said, all these solutions are still not scalable as well as have problems with data management and sustainability. From the research done here, while the use of IoT in the management of information has been very promising, the research is still burgeoning. There is little research done regarding the large scale and secure processing and storage of data produced by IoT. Although there are established frameworks and technologies to address the problem of data management, the solutions that have been offered are not practical for real large-scale adoption and deployment, let alone some key industries like health care, manufacturing, and logistics that handle much higher volumes of data and data is more sensitive in nature (Carvalho et al., 2021). Another research gap identified is the lack of information on the standardization of IoT protocols and possibility to integrate heterogeneous devices into unification of information management systems. Furthermore, even though IoT is acknowledged for the several merits that it has, most organizations end up not implementing the IoT-type information management system because of the various factors such as insecurity, privacy and several other issues that does not follow a standard protocol. This hesitancy underscores the continued need for better and sustainable solutions in these challenges and ensuring that the data remains 'clean' and reliable at big scale.

Research Objectives

In light of the research gap noted above, this study seeks to undertake a qualitative study to examine the extent to which IoT can facilitate the enhancement of information management practices and challenge faced in its implementation. The specific objectives of this research are as follows: For the purpose of investigating the roles those IoT-enabled systems play in information acquisition, management and distribution within organizations. In order to assess the main issues appearing in the course of IoT implementation into the frameworks of IM systems, focusing on data security, privacy and compatibility problems. In order to provide the outlines of mass-producible and highly secure systems for using IoT in information management for different industries. In order to consider the role of IoT in the process of improving predictive analytics and decision-making in real time.The Internet of Things is a powerful concept of exchanging things to advance information acquisition and processing. But the incorporation of IoT into information management practices is not without its headaches as it concerns security, compatibility as well as expansion. To this end, this paper seeks to discuss new paradigms and solutions to the challenges facing IoT-based information management. Through filling the existing research gap, this study aims at offering important insights on how organizations can harness the benefits of IoT of enhancing operations, decision making and data management while at the same time managing risks associated with IoT.

Significance of the Study

Understanding the impact of adopting the Internet of Things (IoT) on information management practices is essential for enhancing data collection, decision-making, and operational efficiency. This study fills a gap in the existing literature by providing empirical evidence on the relationship between (IoT) adoption and information management practices. It focuses on improving how information is acquired, transformed, archived, and utilized.

Research Hypothesis

The study proposed seven main hypotheses about the adaptation of the Internet of Things (IoT) to information management practices which are given below:
$\mathbf{H}_1$: The adaptation of the Internet of Things (IoT) in information management practices has a positive influence on data collection efficiency.
$\mathbf{H}_2$: The adaptation of the internet of things (IoT) in information management practices has increase data storage capacity.
$\mathbf{H}_3$: Internet of Things (IoT) in information management practices has moderate relationship with IoT adoption years of IoT adoption.
$\mathbf{H}_4$: There is moderate level relationship between adoption of internet of things (IoT) in information management practices and interoperability.
$\mathbf{H}_5$: The adaptation of the internet of things (IoT) in information management practices has positive impact on Real-Time Analytics.
$\mathbf{H}_6$: The adoption of internet of things (IoT) in information practices results in data security.
$\mathbf{H}_7$: The adoption of internet of things (IoT) in information practices results in Privacy compliance.

REVIEW OF LITERATURE

The IoT technology has gained tremendous advancement and became influential in influencing information management in different fields. IoT gives way to effective integration and interaction of different devices with each other to achieve machine-to-machine objectives such as data capturing, monitoring as well as data analysis and decision making (Mazhar et al., 2020). Literature on the subject of disruption IoT introduces to managing information encompasses various areas of specialization; analytics, clouds, security, and integration. In this review, major improvements of IoT in information management are presented; challenges as well as the directions for further research are discussed.

IoT and Information Management

The Internet of Things is a major shift in the manner in which information is processed in an organization. Previously, information management was done through paper work that took so much time and was full of errors. These actualize the functions that enable IoT to accumulate huge data from smart devices in the network. This has improved on the availability and quality of data that has been processed for analysis and decision making needs (Koot et al., 2021). Ambrogio et al" (2022) posit that the real- time data delivery disrupts traditional approaches to organizational operations by enabling more efficient use of organizational resources.

IoT and Data Analytics

Another important benefit of IoT in information management is the one based on the generation of the big data which can be analyzed and used for making decisions. The IoT systems use other techniques of data analysis like the data mining, machine learning and artificial intelligence to analyze the data that is collected by the smart devices (Li et al., 2023). These technologies thus allow an organization plan the future, improve its operations and increase value to the customers. For instance, on the aspect of manufacturing IoT sensors can be used to measure and detect the level of usage of the manufacturing machines with algorithms capable of predicting when the equipment requires repairs or replacement hence minimizing on the number of working hours lost (Çınar et al., 2020).

However, there exists the issue of vast data generated by IoT, which becomes a challenge when it comes to information management systems. In SDSs' case, poorly developed data governance standards may lead to ineffective acquisition, storage, and utilization of the data (Ozegin et al., 2024). This has become a difficult task in the scenarios where big data is involved and there is a need for additional storage and processing power which is offered by cloud computing solutions. Recent cloud-based IoT frameworks have improved the data management capability and minimized the integration problem as pointed out by (Jumaili et al., 2023).

Security and Privacy Concerns

As one of the most essential aspects of ISE, information protection is a problem that became even more evident in the context of IoT-oriented information management. IoT devices collect various types of information be it personal or financial thus making it easy for hackers to attack the devices. Malhotra et al. (2021) further point that advancement and popularity of IoT devices mean that the attack surface is vast and threats can find weak points in IoT systems easily. Privacy issue is as relevant, as the IoT systems imply the accumulation of the data, which is of personal nature and is gathered without consent of the end-users.

Different researches have come up with different security frameworks that would help in preventing these risks. Thus, Shafiq et al., (2022) pays much attention to the aspects of encryption, authentication, and access control in case of IoT systems security against malicious attacks. However, looking at the presented solutions in the current literature, there has not been a one stop shop solution of addressing all the security concerns related to mass IoT deployments. Moreover, the IoT context heavily lacks research in privacy issues, including the specific question of the rights people have with regards to their collected data using IoT devices, and more specifically, valuable ethics on the use of the collected data with or without permission from the owners.

Interoperability and Standardization

One of the biggest issues of IoT in information management is that of compatibility or the absence of a common protocol. Generally, the IoT systems may consist of the dissimilar devices which may not necessarily have the proper or identical cognitive developmental level to share the data or work in conjunction with each other (Swamy & Kota et al., 2020). Such lack of standardization is especially disadvantageous in fields like health care and production where data integration is critical in enhancing efficiency and accuracy respectively. That is why several researchers have attempted to put forward a solution to this problem. For example, Qiu et al. (2020) claimed that edge computing can improve the IoT systems' integration because data processing is done closer to the sources, resulting in low latency and better system performance. In the same context, Siddiqui et al. (2020) indicate that the cloud-based frameworks are recommended for enhancing the integration of the IoT devices that are dissimilar and facilitating the management of data as well as enhancing the scalability of the system. However, the integrations have been hampered by the absence of agreed IoT standards; thought proposals for such integrations are on the ground. Additional study has to be carried out in order to set standards which would enable good compatibility between systems while keeping the security and privacy in check.

Research Gaps and Opportunities

Despite these great development achieved in IoT in information management, the following gaps are evident in the current literature. There are, however, some emerging issues, one of which is the lack of solutions that can accommodate a large number of data collected by IoT solutions. Similar to secure processing and storage, cloud computing and edge computing present apparent solutions but are not mainstream techniques and their application in real-world large-scale evaluation remains unclear (Chiang et al., 2023). Furthermore, current literature also fails to provide systematic frameworks that can cover most of the Security and Privacy issues over IoT domain. One of the most important areas to be explored in the future is the factor of standardization of IoT protocols. This is one of the reasons that have made implementation of IoT in information management to lag due to varying standards. Both Issues 14 and 15 states that the IoT systems will only become long-lived globally if there are protocols that can be put in place that will enable the systems to interconnect while at the same time ensuring that data privacy and security are not compromised (Kambourakis et al., 2020).

IoT is very promising to enhance the information management by integrating the provision of timely, accurate and efficient data collection, analysis and decision making. But there are large gaps to fill regarding data safeguard, data privacy and data compatibility. Potential solutions that have come out include cloud and edge computing but more research is still required in order to come up with generic, secure, and elastic architecture that may enable the adoption of IoT in information management. In order to achieve the best IoT outcomes and to establish the sustainable IoT strategy for various industries it is necessary to address the stated research gaps.

METHODOLOGY

The method employed in this research is intended to analyse the effects that IoT has brought about in information management. This section is about the research methodology, data collection techniques, methods of sampling and data analysis and presentation. The research goals are as follows in order to facilitate the achievement of these goals the research is designed as follows:

Research design

This study, therefore, uses quantitative as well as qualitative research to estimate the model. Such a design of the study makes it easy to examine the effects of IoT on IM since it offers both quantitative and qualitative data. In the current study, the cross-sectional research design is adopted since it makes it easier to survey data at one point in time from a range of industries implementing IoT for information management. Targets are organizations that belong to manufacturing or healthcare or logistic industries because IoT is often used there for information management.

Data Collection Methods

In order to accomplish the research goals the following types of data were collected P & S data. The primary data is the data which is collected through the survey having close-ended questions and interview questions and the secondary data is the data which is collected from the already existing documents such as case study, articles, industry reports, and white papers related to the application of IoT in information management.

Surveys : Quantitative data was collected through a structured survey questionnaire from a target population that Includes IT managers, data analysts and systems administrators who work for organizations that has adopted IoT for its information management system. In the self-administered questionnaire, the researcher used Likert-type questions whose main areas of concern are data gathering, data storage capability, results airing, security, and compatibility. This instrument was thus designed based on the literature and adapted in a way to capture the details of the IoT in various industries. The questionnaire was administered online and the participants selected include only 150 people from different fields.

Interviews : Self-administered, open-ended questionnaires were used to Interviews with 15 primary respondents-cum-key informants composed of the CIOs, IT directors/managers, and data governance experts for obtaining qualitative data and understanding the IoT-related opportunities and threats in the context of information management. The interview guide involved asking the participants general questions on; how their organization has applied IoT in information management, measures taken by their organizations to secure and protect privacy in IoT, and the problems experienced in the area of compatibility. All the interviews were conducted through video conferencing and the answers to the questions were audio recorded to make the transcription and further analysis easier.

Secondary data : Secondary data was retrieved from reviewed journals, literature, technical databases and industry reports to supplement the collected primary data. These sources gave more information that developed a bigger picture about how the IoT has revised information management systems across the world including data security, privacy and regulations, and compatibility skills. This review also assists in drainage of existing gaps in the current literature and provided an understanding of the new trends in adoption of IoT.

Sample Selection

Indeed, to get the participants in the current study, purposive sampling was used in order get participants with prior experience in IoT and its application in information management. The target audience consists of organizations that belong to the manufacturing, healthcare, logistics, or IT industries to target industries that use IoT frequently. Survey participants were derived from organizations that have adopted IoT-IMIS for more than one year to increase the likelihood of users' understanding of IoT. In a view of this, interview participants were chosen on the basis of their responsibilities in the discretion of IoT and information management strategies. This purposive sampling help to make sure the interview provided a good insight into the strategic and operation level IoT integration challenges.

Data Analysis

The goal of the data analysis process was to have a structured approach towards the achievement of the research objectives. Statistical methods were applied on quantitative data collected from the questionnaire to establish trends of IoT in information management. To enable a summary of the data, descriptive statistics was employed while inferential statistics like correlation and regression analysis was applied to analyze the relationship between IoT integration and general information management aspects like data accuracy, storage size and security.

Quantitative Data Analysis

Primary data was collected through surveys and further tested and checked using statistical software to measure the influence of IoT on the participant's information management practices. Descriptive statistics including mean scores and standard deviations were computed in the aspects of data collection speed, storage and integration as well as overall system integration. Linear regression analysis was performed to examine the relationship of these factors to IoT adoption with a view of identifying the optimal predictors of success in IoT applications in information systems. With the help of such an analysis it is possible to confirm or reject the hypotheses in question concerning the influence of IoT.

Qualitative Data Analysis

The interviews were analyzed through processes which involved qualitative content analysis, and specifically analysis through themes. In this method, the transcripts are coded and compared in order to look for patterns in the areas of difficulties and benefits in the use of IoT. Manual coding was applied in the coding process in order to sustain the relevance and detection of the major concepts. These revealed the main concerns of organizations inclusive of security risks, data management problems, and challenges in creating compatibility between various IoT systems.

Secondary Data Analysis

Secondary data were content analyzed to establish trends, threats, and possibilities of IoT for information management. This analysis supplemented the primary data by giving an overall view of the current IoT adoption status and trends across the world along with comparing them with the data obtained from the surveys and the interviews.

Ethical Considerations

The study's ethical considerations were highly revered and the participants provided informed consents before engaging in any surveys and the interviews. , subjects were explained on the objectives of the research, what would be done with the information and what precautions had been taken to guarantee their anonymity. Interviews were conducted in such a way that confidentiality of the participants was observed and only aggregated data were used in this report, specific details concerning practices inside the organizations were not reported.

As a result of this, this quantitative and qualitative research strategy gives adequate foundation upon which to analyze the effects of IoT with reference to information administration. Combining statistical and non-statistical research gives a wider perception on the way IoT affects data gathering, preserving, sharing and protection. The methodological approach enables the examination of the concerns that organizations experience with IoT implementation as well as enlightening possible strategies to address these concerns. These findings of the study will add to the existing literature on Internet of Things and its impact on information management so that organizations can be ready for the future digital world.

RESULTS

The purpose of this study was to evaluate the effect of the Internet of Things (IoT) on information management systems across a range of organizations. This comprised an assessment of the suitability of the methods used in data acquisition, data storage, and data processing in real-time, data protection, data privacy, data integration and overall IoT satisfaction among the partners. Through the statistical analysis that was done, the tables that have been illustrated reveal various important findings that would meet the research objective. "Finally, doing a statistical analysis as illustrated in the tables meets the overall research objective.

Table 1: Correlation Matrix of Variables Related to IoT Adoption and Information Management

Variables	Org Size	Years Since IoT	Data Efficiency	Storage Capacity	Real-Time Analytics	Data Security	Privacy Compliance	Interoperability	Overall Satisfaction
Org Size	1	0.46	0.37	0.32	0.35	0.21	0.41	0.19	0.44
Years Since IoT Adoption	0.46	1	0.54	0.61	0.55	0.49	0.48	0.57	0.65
Data Efficiency	0.37	0.54	1	0.68	0.72	0.39	0.5	0.35	0.64
Storage Capacity	0.32	0.61	0.68	1	0.76	0.6	0.59	0.61	0.7
Real-Time Analytics	0.35	0.55	0.72	0.76	1	0.67	0.66	0.61	0.73
Data Security	0.21	0.49	0.39	0.6	0.67	1	0.68	0.62	0.66
Privacy Compliance	0.41	0.48	0.5	0.59	0.66	0.68	1	0.67	0.75
Interoperability	0.19	0.57	0.35	0.61	0.61	0.62	0.67	1	0.64
Overall Satisfaction	0.44	0.65	0.64	0.7	0.73	0.66	0.75	0.64	1

Descriptive analysis of the data shows positive, small but moderate relationship between sizes of the organization (in number of employees) with the years of IoT adoption which is equal to 0. 46. This means that large numbers of organizations can scale their resource and technical capabilities in order to integrate IoT systems, thus achieving the goal of this research to examine the adoption of IoT systems. The correlation analysis revealed that efficiency of data collection increased with years since IoT adoption (r = 0. 54) and with real-time analytics (r = 0. 72) as shown in the correlation matrix above. To some extent firms that have been using IoT for a longer duration depict higher efficiency levels in data collection. The close correlation between the observed efficiency of data acquisition and the proposed real-time analysis also points to the fact that IoT enhances the real-time processing of large data flows, which is one of the imperative facets of contemporary information management. Storage capacity extinguished positive and strong relationships with both formal data collecting efficiency (r = 0. 68) and real-time analyses (r = 0. 76). This result shows how organizations that are effective in data collection normally have the capacity to store these large volumes of data. The analysis of results revealed that, real-time analytics and monitoring, storage capacity, data collection efficiency and general satisfaction were positively correlated and significant, with the highest correlation coefficient equal to 0. Thus, it emerges that the real- time management and processing of data is a critical factor in realizing IoT capabilities in organizations. Real results proved that data security has a direct positive link with real-time analytics (r = 0. 67) and a positive correlation with storage capacity (r = 0. 60) yet a moderate correlation with the number of years since Internet of Things adoption (r = 0. 49). From this, it can be deduced that organizations that adopted IoT for a longer duration are likely to develop robust security mechanisms. Interoperability had moderate and significant correlations with the following factors; Years since adopting IoT (r = 0. 57), Data security (r = 0. 62), and overall satisfaction (r= 0. 64). Privacy compliance had high correlations at r= 0. 68 and Overall satisfaction at r = 0. 75. As a result, the high correlation with data security shows that the organizations that priority security measures will also abide by privacy legislation. The high correlation between privacy compliance and the overall satisfaction implies the importance of privacy's resolution for integration of IoT into information management practices. This means that as overall satisfaction increases, the subject organization's privacy compliance improves, in addition, the organization's satisfaction in real time analytics and storage capacity also increase, though at a slightly lower rate as observed by the following coefficients; r = 0. 75, r = 0. 73 and r = 0. 70 respectively. This shows that satisfaction with IoT adoption can be largely attributed to the handling of data as well as security.

Table 2: Descriptive statistics summary for IoT adoption variables

Variable	Count	Mean	Std Dev	Min	25th Percentile	Median	75th Percentile	Max
Organization ID	14	107.5	4.18	101	104.25	107.5	110.75	114
Organization Size	14	939.29	605.48	100	462.5	950	1425	2000
Years Since IoT Adoption	14	2.71	1.2	1	2	2.5	3.75	5
Data Collection Efficiency	14	4.07	0.83	3	3.25	4	5	5
Storage Capacity	14	3.71	1.07	2	3	4	4.75	5
Real-Time Analytics	14	4.07	0.83	3	3.25	4	5	5
Data Security	14	3.5	0.85	2	3	4	4	5
Privacy Compliance	14	3.79	0.89	3	3	3.5	4.75	5
Interoperability	14	3.21	0.97	2	2.25	3	4	5
Overall Satisfaction	14	3.86	0.86	3	3	4	4.75	5

It was also computed that the overall mean score was 4. The Mean Table 07 for data collection efficiency also reveals the fact that IoT influence is positive and has a strong bearing on improving data collection mechanism in organizations. More specifically, educational institutions earn an average storage capacity score of 3. 71 (Mean Table) assures that IoT enabled systems need organizational structures to enhance their data storage architectures in order to accommodate a lot of data, thus achieving the goal of evaluating the enhancement in storage capacity because of IoT. Then the students' response will be slightly more expressive, with a mean score of 4. In the case of 07 (Mean Table), it has been concluded that IoT has an impact on the real-time information as it has become an important factor of Information Management systems. The mean was 3. 50 Mean Table for Data Security suggests that, as seen in figure above, IoT has positive impact on advancement of diverse aspects of information management, however it is an area that needs improvement in view of data security. They also recorded a mean score of 3. 21, this parameter is still seems to still be in the process of growth area. Other factors exhibit a moderate relationship, thereby indicating that even as IoT has provided some degree of interoperability, there is still challenges organizations experience when trying to implement IoT systems across different platforms. More specifically, concerning privacy compliance, the mean score of the participants was 3. 79 suggests a very high level of usability directly associated with data securityTo the best of my knowledge, bases on the mean score of 3.86, the practitioners are generally satisfied with the cost of interoperability and security is still high.

The evaluation also validates that IoT has greatly improved the different facets of information management practices especially in the collection of data, storage and even analysis in real-time. However, improvements are still to be made, which have to do with the security of data and integration between systems. Before outlining the results, it is essential to note that the high levels of correlation between these factors and overall satisfaction indicate that organizations receive the most value from IoT with data infrastructure and data security strategies. To achieve these outcomes, this study meets its aim of offering a principal evaluation of how IoT affects major aspects of information management.

DISCUSSION

The results derived from the study contribute to the understanding of the effects of IoT on information management and also supports and builds upon prior research as well as show areas where organizations are yet to fully manage the effects of IoT. The correlation of the organizational size and IoT adoption can also be

discussed based on the previous research that usually attributes greater organizations to the earlier and more profound introduction of IoT. (Ancarani et al. 2020; Ahmetoglu et al., 2014) identified that the size of organizations have indicated that big firms can afford the necessary financial and technological capital for incorporating IoT technologies into their business models. Yet the present research mitigates this conclusion by showing that even small enterprises are experiencing positive IoT impacts, potentially indicating that the cost of IoT integration is coming down and is therefore becoming more accessible. This is line with the arguments of other authors such as (Vass et al. 2018) who pointed out that IoT improves the speed of data collection process. Newly, in this study findings indicate a mean score of 4. 07 in data collection efficiency conform to the foregoing argument on staff success. However, one novel finding here is the fact that there has been a progressive increase in efficiency, which has been confirmed by the year of use IoT which is positively correlated to efficiency. This means that as organizations develop better IoT systems and become accustomed to the amount of data flowing in the systems, there is an opportunity to fine-tune the operations which is a factor that has not been fully explored in prior research (Allioui & Mourdi, 2023).

Real-time analytics is another area where they find that this study validates existing studies, which also bring some new research about the subject. Other works like (Argyropoulou et al., 2024) expressed that IoT has the capability to process the real-time data in a given network. However, this research also proposes that organizations with greater experience of IoT disclosed greater satisfaction with the real-time analytics indicating direct positive relation ($r = 0.\ 73$) between the two. This means that while real-time analytics is a clear advantage, the depth of its function is only consistent once a period of use and possibly the firms improving on the use of IoT data in their decision-making. The findings concerning data security are pointing out to the existing shortcoming in the current IoT practices which are in line with the observations made by Tange et al. (2020) regarding the shortcomings of IoT systems in terms of protection from cyber threats. To some extent, data security also increased with the mean score of 3. 50, it is still considered to be one of the most significant systematic weaknesses characteristic of IoT strategies. This is in line with (Omolara et al., 2022)'s assertion that because IoT is distributed, it is very hard to protect. The new here is the fact that even those organizations that claimed more extensive IoT experience are not protected from security issues suggesting that while IoT offers manifold opportunities benefits still security lags behind and more research and development work is needed in developing secure IoT models needed.

There was significant correlation between privacy compliance index and overall satisfaction with total correlation coefficient of 0. 75 thus supporting the conclusions by (Dong et al., 2021) that organizations have embarked on privacy compliance standards. However, this study indicates that the organizations with improved privacy policies will experience improved satisfaction with IoT systems, meaning that the compliance with regulations is not always mandatory but for the benefit of the organizations. As it was expected, interoperability, the capability of IoT systems to easily interface with the other system and devices, was found to be an ongoing issue in this study with a mean of 3. 21. Other studies like (Fortino et al., 2020) have equally proposed that there should be efficient interaction between the IoT systems in question. The low interoperability score also mean that many organizations are still able to integrate IoT systems between different platforms, as noted by (Amara et al., 2020) who stated that lack of standardization is one of the major challenges towards IoT implementation. This is important as it indicates an area which needs more focus in terms of research and innovation especially in the creation of formalisms that will facilitate effective IoT devices' communication.

The overall high mean score of 3 indicates that IoT is well adopted in the hospitality industry by the customers. 86 shows that overall the organizations' perception of IoT is positive even though they face issues such as security of data and integration in IoT. In this regard, this finding supports (Roe et al., 2024) that organizations that adopt IoT technology solutions achieve significant efficiency and decision advantage. On this regard, this study establishes the fact that satisfaction is not homogenous across all IoT segments. As for the factors of satisfaction, data collection, real time analytics as well as privacy compliance are some of the areas that are relatively stronger for the cloud community while security and interoperability are comparatively the areas of relatively lower strength (Sharma et al., 2020). This showed is that organizations that are implementing IoT should approach it systematically to ensure that these problems continue to be eradicated to support the full benefits of internet of things. Thus, the findings indicate that despite the fact that IoT has a massive positive impact on the enhancement of data management practices, the issue of data security and that of interoperability has been viewed as a critical concern. Future research can be directed on the enhancement of IoT security measures that can offer increased safety to the network

and standardization of solutions to manage the integration of IoTs based platforms (Karie et al., 2021). Coupled with the positive topper privacy compliance with overall satisfaction, the findings show that those organizations ensuring data privacy use IoT solutions more effectively. Hence, it is vital that regulatory authorities and industries determine policies that can be adopted in IoT with regard to privacy and security. Lastly, this study also shows that organizations realize maximum value from IoT after sometime, which means that it is essential to invest in employee training and system improvement for IoT to be effective.

CONCLUSION

To this end, the purpose of this paper is to investigate the role that IoT plays in managing information in organizations with special emphasis on the effectiveness of data gathering, storing and analyzing information in real time, information security and protection of privacy, and compatibility. It is revealed that: IoT positively impacts on the improvement of information management especially in the aspects of data gathering, analysis in real time and organizational performance; thus achieving the research aim. Consequently, the investigation demonstrates that IoT systems result in significant enhancements to data acquisition productivity and real-time analysis, thus supporting the increasing literature on the use of IoT as a key source of change in contemporary organizations. Senior users, therefore, have higher levels of satisfaction, coirming the intuition that Iota's benefits are long-term and those organizations' satisfaction increases over time as experience with the technology grows. This will go a long way in showing that it is strategic to channel resources towards the development of IoT in enhancing decision making that is informed by data. The research also highlighted existing issues that exist in terms of data security and compatibility, despite this, the effect of IoT was seen to have a positive effect. Consequently, it is recommended that organizations must implement advanced, more specifically secure and standardized systems if they are to reap the benefits of IoT adoption intending to considerably enhance the management of information. Therefore, the study brings into reality its intended objective by proving that IoT brings significant changes in information management practices. But it can be concluded that further works are required to resolve the security and the interoperability concerns, and provide some insights for the research and the improvements of IoT in the future.

LIMITATIONS AND RECOMMENDATIONS

Internet of things (IoT) devices produce large amounts of data facilitating them weak to unauthorized access, data crack, and cyber-attacks. The large volume of collected data may lead to storage issues, as well as challenges in analysis and processing. Internet of things (IoT) data often includes sensitive personal and organizational information, which raises ethical concerns and the need for monitoring. The Development of internet of things (IoT) infrastructure, which includes networks, sensors, and safety protocols, needs noteworthy investment. Internet of things (IoT) produced data may comprise faults, conflicts, or repetition, affecting decision-making. Various internets of things (IoT) devices and platforms may not integrate smoothly, leading to inefficiency in data exchange and management.

Future recommendations are develop a dynamic system that ensures encryption, multi-factor authentication, and real-time threat detection to protect IoT data. Use the latest trends in technologies, such as edge computing, cloud computing, and AI-driven analytics, to process large IoT data proficiently. Implement Homogeneous Protocols that encourage IoT principles to improve device interoperability. Enhance storage, network bandwidth, and processing capacity to efficient IoT generated data. Ensure Continuous monitoring and updating policies to align with global and regional data protection laws.

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