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Strategies of IT Managers to Promote Technology Adoption in Jamaican Government Institutions

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
2025

Abstract

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MA, University of the West Indies, 2016

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Abstract

The success of digital transformation depends on effective adoption of technology. Information technology (IT) managers and policymakers must develop robust tactics to achieve long-term acceptance and use of new technologies, as a lack of effective technology adoption strategies can hamper carefully designed digital transformation initiatives. Grounded in the extended unified theory of acceptance and use of technology, the purpose of this qualitative multiple case study was to explore the strategies used by IT managers to effectively promote technology adoption in Jamaican government institutions. The participants were four IT managers and practitioners in Jamaican government institutions. Data were collected from semistructured interviews and organizational documents. Through thematic analysis, six themes were identified: (a) organizational preparedness and technological readiness, (b) training and support, (c) inter-organizational collaboration, (d) user involvement, (e) in-house IT technical expertise, and (f) leadership support. A key recommendation is for IT managers to successfully promote technology adoption by providing adequate information communication technology infrastructure and tools, developing tailored training and support programs, building trust, facilitating user engagement, and using a phased implementation approach to introduce new technologies. IT managers and policymakers can use these identified strategies to attain the potential for positive social change by improving the technology adoption rate in government institutions, delivering improved e-services, and providing the public with equal access to government resources.

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Dedication

I dedicate this research to my deceased brother, Paul Franz Henry, who, during my formative education, invested time to develop my intellectual capacity. This has significantly contributed to my academic achievements. His commitment ensured that I matriculated to an esteemed high school, paving the way for my dedication to pursue knowledge. My mother, Maria Elodie Lamont and sister Stacy-Ann Joandel (nee Henry) were also instrumental in my professional growth and development. Their encouragement and guidance allowed me to excel in my scholarly endeavors. My mother's resilience to overcome adversity and grief influenced my zeal to succeed academically. While on her academic journey, my sister helped to guide my university education and career path in Librarianship. My college introduction to ICT and the high demand for this skill in the library environment propelled me toward a degree in Doctor of Information Technology. I am grateful to all who encouraged and inspired me during this journey.

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Section 1: Foundation of the Study

As government organizations continue to struggle with low adoption of new technologies, they fail to reap the benefits of cost-saving measures, accelerated processing time and enhanced financial performance (Mensah, Zeng, & Lou, 2020). As such, just about 15% of e-governments that have been implemented worldwide achieved any benefits. Further, the challenge of government employees' adoption of information technology has affected the delivery of e-government services to the public (Gholami et al., 2021).

It is important that technology implementers and policymakers have a clear understanding of the technology adoption process and the strategies required to successfully implement technology programs. According to Mensah, Zeng, and Lou (2020), ill-planned strategies and ineffective policies negatively impacted the implementation of e-government systems. Some government technology projects also failed due to low technology adoption in organizations because the individual needs of employees were not considered during the design and execution of the implemented system. Thus, it is crucial to examine user attitude toward technology adoption and the requisite strategies needed to promote this adoption.

Background of the Problem

Since the advent of new technologies, organizations have been introducing various systems and projects that promised service innovations, efficiency, improved performance, competitive advantage, and overall growth (Alibekova et al., 2020). However, the adoption and failure rates of information and communication technology

(ICT) projects across public and private sectors vary. That is, government institutions continue to lag behind private companies in the use and adoption of ICTs (Faro et al., 2022). Despite the implementation of various initiatives including digital transformation task teams (Mergel, 2019) and other similar plans, the success rate of government ICT projects remains low (Clarke, 2020).

According to Mergel (2019), this perpetual transitional state of public sector digitalization programs can be attributed to a chief information officer's (CIO) inability to implement ICT projects. The management of existing digital service offerings has also been below standard and resources grossly under-utilized (Clarke, 2020). Further, the lack of innovation prevents organizations from readily adapting to change and negatively affects productivity (Faro et al., 2022). Nevertheless, the capabilities needed to implement and improve innovation within public sector institutions can be achieved through effective strategies and IT governance principles (Luna-Reyes et al., 2020) specifically in the context of Jamaica. In that regard, this study explored the research question: What strategies do IT managers use to effectively promote technology adoption in Jamaican Government institutions?

Problem Statement

Governments worldwide continue to face barriers in the implementation and adoption of new technologies. Despite efforts to achieve digital transformation since mid-1990s (Wilson & Mergel, 2022) approximately only 10% of local governments have been able to demonstrate the know-how to integrate enterprise systems to enact digital transformation in the organization (Pittaway & Montazemi, 2020). The general

Information Technology problem was the lack of new technology adoption within government institutions in Jamaica. The specific IT problem was that some IT managers lack strategies to promote technology adoption in Jamaican government.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the strategies used by IT managers to effectively promote technology adoption in Jamaican government institutions. The population for this study included IT managers and practitioners involved in implementing new technologies, adoption strategies and innovative services in Jamaican government institutions. The implication for positive social change is that by improving the technology adoption rate in government institutions, the delivery of e-service will improve, providing the public with equal access to government resources.

Nature of the Study

There are three research methods which include qualitative, quantitative and mixed methods (Scalcău, 2021). I selected a qualitative method for this research to conduct an exploratory inquiry. A qualitative approach is appropriate for exploring research problems and gaining a deeper understanding of the phenomenon (Tomaszewski et al., 2020). Conversely, the quantitative method examines cause and effect among variables and determines how they relate to each other by conducting statistical procedures and testing hypotheses (Bloomfield & Fisher, 2019). Accordingly, the mixed methods approach incorporates the use of both qualitative and quantitative research to assess the problem being studied (Timans et al., 2019). To explore the strategies used by IT managers to effectively promote technology adoption and service innovation, I did not test any hypotheses that are usually associated with quantitative research and the quantitative section of a mixed methods research.

I considered three of the five qualitative research designs to conduct my study on technology adoption in government institutions: (a) phenomenological, (b) ethnographic and (c) case study. After careful review of the research designs, the case study was found to be more appropriate for the research. The case study design allows the flexibility to study different subjects such as an individual or organization and focuses on the context of the case. Thus, the design allows for an in-depth understanding of the research problem (Tomaszewski et al., 2020). That is, researchers are able to rigorously examine all aspects of the select institution and the factors that influence the phenomenon under study (Asenahabi, 2019). The detailed information that was collected using the case study design permitted me to learn more about the select organizations and their managerial procedures that guide technology adoption. Tomaszewski et al. (2020) confirmed that the case study design was suitable when there is a need to gain thorough understanding of the specific case in a real-life context. Therefore, I did not select the phenomenological design because the method focuses on individuals and their experiences. Asenahabi (2019) explained that a phenomenological study is an inquiry of a phenomenon based on an individual's involvement and their account of the scenario. The ethnographic design was not chosen because it focuses heavily on the culture and ideologies of an organization or group. According to Tomaszewski et al. (2020), an ethnographic design generally explores a group's shared experiences and cultural aspects such as language, behavior patterns and belief systems.

Research Question

What strategies do IT managers use to effectively promote technology adoption in Jamaican government institutions?

Interview Questions

1. What is your current job function and how long have you been working in that role?
2. What are your experiences with initiatives that align organizational transformation goals with technology integration efforts?
3. How would you describe your experience implementing ICT projects within government institutions?
4. What is your experience with staff attitude toward adopting and using new technologies?
5. What strategies have you used to implement ICT projects and promote technology adoption among staff?
6. How would you describe the effectiveness of the strategies used to implement ICT projects and promote technology adoption among staff?
7. What strategies should be developed to improve the implementation of ICT projects and promote technology adoption among staff?
8. Do you have any additional comments to add to this topic?

Follow Up Questions

1. How does your understanding of the organization’s culture help you to develop strategies that promote technology adoption?

2. What challenges do you experience when implementing strategies to promote technology adoption among staff?

Conceptual Framework

The original concept that grounded this study was the Venkatesh et al. (2003) unified theory of acceptance and use of technology (UTAUT) that assesses the probability of success for new technology introductions and aids in the understanding of the triggers of acceptance to proactively develop strategies aimed at groups of users that are unwilling to adopt and use new systems. The logical connections between the framework and the nature of my study prompted the need to understand strategies used by IT managers to influence IT adoption through the lens of UTAUT concept. Thus, the concepts of performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention, and use intention were proposed to explain the themes generated from interviews and guided the interpretation of the findings. However, two new concepts, hedonic motivation (comfort) and trust were later added based on research data. In that regard, the Venkatesh et al. (2012) extended unified theory of acceptance and use of technology (UTAUT2) was adopted to explain the effects of the unexpected concepts that were viable predictors of technology adoption. The framework facilitates the inclusion of new constructs and presents a comprehensive method to analyze variances that emerged from the study.

Definition of Terms

This section provides clarification on the operational terms used in the study. The definitions are intended to provide readers with an understanding of the context in which they are used within the study (Paltridge & Starfield, 2007). Therefore, for the purpose of this research, the terms are defined as follows.

Agency: is a public body that was formally separated from the ministry department to carry out public tasks at a national level on a permanent basis. It is staffed by civil servants, it is financed mainly by the government budget and is subject to legal procedures (Öberg & Wockelberg, 2021)

Digital transformation: is replacement of old technologies with new ones, redesigning core organizational processes to accommodate the development of new skills and new ways of working (Pittaway & Montazemi, 2020)

e-Government: is governments' use of ICT as a tool to achieve better government and improve service delivery (Al Sayegh et al., 2022)

Ministry department: is a central government institution that is responsible for the formulation, administration, coordination and monitoring of overall policies and the enforcement of legislation (De Clerck & Wickens, 2015)

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions represent a researcher's perspective and belief about a phenomenon (M. B. Alam, 2019). These philosophical ideas tend to influence the theoretical framework used to guide research. The assumptions also help to determine the research design for the inquiry (Creswell & Poth, 2018). Thus, assumptions are important to the research study, as they aim to explain predictive accuracy of a theory and provide an understanding of the logical framework that will guide the analysis to generate new explanations (Foss & Hallberg, 2017). The key assumption in this study was that participants would answer the questions truthfully based on their experience with technology implementation and the development of strategies to encourage adoption within their institutions. It was also assumed that the IT managers and specialists employed in the three institutions selected for the case study would appropriately represent the practitioners who are responsible for the implementation of new technologies and ICT adoption decisions in government institutions. Lastly, I assumed the findings would provide useful insights that enable IT practitioners to develop effective technology adoption strategies that may result in improved service delivery, increased equal access to government resources and communities becoming more empowered to actively participate in government e-programs.

Limitations

Limitations provide useful information about the weaknesses of the study. As such, it represents factors that may affect the conclusion and outcome of the study (Ross & Bibler Zaidi, 2019). The possibility of participants being unavailable was a limitation for the study. Additionally, the inability to identify dates convenient for participants, receive consent from the organization/participant to conduct interviews, and identify a suitable location to conduct interviews were also limitations that could affect the study. Accordingly, constraints to disclose organizational information could pose certain limitations for the study. Another weakness of this qualitative multiple case study is the difficulty of generalizing the findings.

Delimitations

Delimitations generally represent established boundaries that outline the scope of the research (Alpi & Evans, 2019). The delimitations considered for this study include (a) the strategies to be explored will come from IT managers from 3 government agencies in Jamaica (b) only IT managers that have achieved significant technological adoption in their organization will be considered for participation in the study (c) IT managers with less than 10 years' experience in their role will be excluded from the study. The population location was also restricted to government organizations in Jamaica, which implies that the findings of the study may not be transferable to future research of IT managers' strategies to promote technology adoption in other developing countries.

Significance of the Study

Contribution to Information Technology Practice

The findings of this study may be useful to IT managers in both the public and private sectors by providing information that may enable them to develop effective strategies that may boost the levels of technology adoption. The practical guidelines that were developed may complement any existing government policies and regulations for the implementation and monitoring of ICT resources. This study provides valuable information that may enable the IT managers in these agencies to develop effective strategies that may boost the levels of technology adoption. Additionally, it may help to enhance the capacity of the IT manager as their roles shift from an operational to a more strategic use of technologies (De Tuya et al., 2020).

Implications for Social Change

The findings of this research may facilitate positive social change by influencing the development of a sustainable digital economy. As such, service delivery may improve, equal access to government resources increased, and communities become more empowered to actively participate in government e-programs. Additionally, policymakers may be able to use the findings from the study to develop holistic policies that meet the needs of users and encourage ICT adoption among employees and citizens.

A Review of the Professional and Academic Literature

An examination of the literature identified concepts about strategies used by IT managers to promote technology adoption in government and other related institutions. The available literature established the context for my research study. As such, most of the literature selected presented findings that affirmed the issues that exist regarding the low levels of technology adoption in government. Accordingly, the researchers proposed possible strategies that could improve technology adoption. Other selected literature focused on UTAUT and UTAUT2, which forms the conceptual framework for this study. Additionally, most of the research articles identified for the literature review were published no later than 2019 to ensure the currency and validity of the findings. Therefore, I used at least 100 articles in the literature review section. Based on that amount, approximately 95% were verified in UlrichsWeb as peer-reviewed ("Ulrich's Serials," 2023), 1% were verified as peer-reviewed via official websites, 3% are government-published articles or policies, and 1% are international organization-published reports.

The literature review is organized using themes to identify trends that may be relevant to the topic. As such, themes will be discussed in each paragraph using the concepts of the UTAUT conceptual framework. These include (1) performance expectancy, (2) effort expectancy, (3) social influence, (4) facilitating conditions, (5) behavioral intention, and (6) use intention. Accordingly, the specific details presented using the UTAUT concepts are expected to enhance the readers' understanding of the research. Consequently, the literature review may reveal new insights and add meaning to the concepts that will be explored in the research.

Several online databases including EBSCO, Google Scholar, Emerald Insight, JSTOR, ScienceDirect and IEEE Xplore were searched to locate literature that was relevant to the study. The general keywords used to retrieve applicable articles were *technology adoption*, *government institutions*, *public sector*, *IT managers*, *e-government* and *government employees*. Additionally, most of the articles considered for this research were published within three years of this research's completion. Notably, newer publications present novel strategies, trends, and practices in keeping with the rapid changes that are occurring in the IT environment. Therefore, some of the strategies identified during the preparation of the study may no longer be useful by the end of the three years. Where possible, much concentration will be placed on the newer literature sources to assure the viability of the research findings.

In this qualitative multiple case study, the strategies used by IT managers to effectively promote technology adoption in Jamaican government institutions was explored. Despite the number of advancements and implementation of IT programs in government institutions, recent studies suggested that technology adoption in public sector organizations was low (Wilson & Mergel, 2022). In this study, the reviewed literature provided valuable insights on the issues involved in the implementation of government ICT projects and the strategies employed to influence adoption. As such, factors affecting digital transformation were identified (Alibekova et al., 2020). Therefore, different initiatives that have been implemented to address government digital transformation projects that failed were explored in other literature. Accordingly, a set of criteria was outlined to examine the strategies that may be used to identify possible solutions to the IT adoption issues (Clarke, 2020).

Useful information about government CIOs, their skills in developing effective strategies, and the roles they play to successfully lead digital transformation were presented in the literature. Consequently, articles revealed that the IT manager's limited managerial and technical skills tend to result in ineffective strategies to influence the transformative process (De Tuya et al., 2020). Therefore, it was noted that the lack of requisite knowledge to implement and gain support for new technology is a barrier to the progression of digital transformation (Wilson & Mergel, 2022). As such, it was asserted that managers must have the know-how to effectively lead the implementation of systems that support digital transformation (Pittaway & Montazemi, 2020). Additionally, IT leaders in public sector organizations should be able to develop techniques that are likely to promote successful IT adoption (Faro et al., 2022). To gain more insight on the barriers and how they impact technology adoption, these factors were identified and discussed. Cinar et al. (2019) asserted that the most effective way to avert technology adoption hindrances is to carefully detect and assess factors that act as barriers. Accordingly, the UTAUT model, which Venkatesh et al. (2003) developed, was used to help determine factors crucial to technology adoption and guided the analysis of the data that was collected to answer the research question. Additionally, the inclusion of the UTAUT2 framework later developed by Venkatesh et al. (2012) strengthened the explanatory power for constructs that were not considered at the start of the study.

Unified Theory of Acceptance and Use of Technology

The strategies IT managers used to effectively promote technology adoption in Jamaican government institutions, that was explored in this research, generally aligned with the UTAUT conceptual framework. The framework enabled analysis of potential strategies that could be utilized to drive acceptance and use of innovative approaches in the workplace and provided an ideal structure to test the rate of technology adoption. Accordingly, data on the determinants of acceptance that could inform the development of suitable intervention strategies were presented in the framework. As such, UTAUT was used as the base model in this research to provide context for analyzing technology adoption (Venkatesh et al., 2003). The model was also used to emphasize the impact of facilitating conditions and social influence on strategies developed to promote technology adoption in the workplace. That is, the constructs of the model allowed for in-depth contextual analysis of adoption patterns associated with the implementation of technology in organizations (Marikyan & Papagiannidis, 2023). Thus, the rich description of the critical elements facilitated greater understanding of the phenomenon.

Appropriate design methods that are geared towards influencing individuals to adopt and use technology were developed from the framework (Venkatesh et al., 2003).

The model helped to describe the phenomenon and presented details through themes that developed from patterns (Tamilmani, Rana, & Dwivedi, 2021). The UTAUT model also aided in determining how behavior and use intention evolved (Wedlock & Trahan, 2019). Thus, examining the research problem through the lens of UTAUT allowed a greater understanding of the triggers of acceptance to proactively develop strategies aimed at groups of users who are unwilling to adopt and use new systems. However, based on two new constructs that emerged from the findings, the UTAUT2 was incorporated to examine additional variances in the intent to use and accept technology. The UTAUT2 model was also ideal to predict behavioral intention. As such, five key constructs from the UTAUT2 namely performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation were examined to provide clarity on pertinent issues (Tamilmani, Rana, & Dwivedi, 2021). Cheng et al. (2020) alluded that comfort can be associated with hedonic motivation as a predictor of technology adoption. Trust was also added as a new construct to explain how the concept impacted the acceptance and use of new technologies. Joshi (2025) suggested that the inclusion of trust in the extended UTAUT2 model provides a robust foundation to examine technology adoption. Notably, the relationships among the key concepts provided validity for the predictors of technology use (Venkatesh et al., 2012). For instance, performance expectancy, social influence and effort expectancy can significantly affect behavioral intentions. The relationship between facilitating conditions and behavioral intention has considerable impact on use intention (Tamilmani, Rana, & Dwivedi, 2021).

Limitations of UTAUT

UTAUT was designed from the perspectives of the implementer of new technologies in an organization. The constructs represent utilitarian characteristics. As such, UTAUT2 was developed to address the shortcomings of UTAUT (Lai, 2017). Czerwinska (2020) suggested that the flexibility of the conceptual framework to accommodate different sets of extensions makes it ideal to examine technology acceptance and all the facets of the adoption process. However, Lai (2017) argued that despite the model’s versatility and explanation power, which exceeds other models such as technology acceptance model (TAM) and theory of reasoned action (TRA), added determinants such as hedonic motivation, price value, and habit still presented some limitation of effectively assessing users’ motivation to accept and adopt technology. That is, tests conducted using this model in a context of consumer technology are outside its design scope or organizational setting. Blut et al. (2022) agreed that UTAUT2 presented logic that explains the disparities in the technology adoption process and provides insights on the boundary conditions that are critical for validating the framework. But there were inconsistencies across research findings that suggest testing of predictors was ad hoc. As such, concerns have been raised about the legitimacy of results derived from the analysis used to determine the behavioral intention of employees and other user categories. Tamilmani, Rana, Wamba, & Dwivedi (2021) also found that UTAUT2 did not present well defined boundary conditions and a clear representation of environmental class. Thus, some findings could be flawed. Therefore, more research may be required to examine key concepts from the end-user perspective (Rondan-Cataluña et al., 2015). Nevertheless, for the purpose of this research, UTAUT2 was assessed within the work environment albeit from the implementer's point-of-view.

Using UTAUT2 to assess the probability of success for new technology introductions, clear explanations on themes generated from interviews were presented. Additionally, technology acceptance, use, and effort expectancy were examined in the work setting (Venkatesh et al., 2012). The different pieces of literature that incorporated aspects of the UTAUT and UTAUT2 frameworks were examined to provide rationale for the potential themes including performance expectancy, effort expectancy, social influence, facilitating conditions that guided the analysis of my research findings. Additionally, context and justification for the research question that was used to explore the problem were represented in the articles. Noteworthy, the original UTAUT model was generally used in some of the studies to examine the relationship of the four main concepts of performance expectancy, effort expectancy, social influence, and facilitating conditions. Behavioral intentions and use intention tend to be treated as derivative factors that are impacted by the four main concepts. In this study, the framework was extended to include hedonic motivation (comfort) and trust as elements that improved explanations for intention and use. The conceptual framework also incorporates four main demographic moderators including age, experience, gender, and volunteerism that are sometimes used to increase the predictive capacity of the concepts (Puspitasari, 2019). The moderators tend to strengthen the explanatory powers of the model (Li & Zhao, 2021). That is, the effects of the moderators on the relationships between the constructs clearly explains the impact of factors that influence technology acceptance and use (Terblanche & Kidd, 2022). However, due to the variance in contexts and dynamic nature of technology adoption behavior the moderators were not always applicable to the case being studied (Dwivedi et al., 2019). As such, this research focused on applying the experience moderator to identify the strategies used by IT managers. The moderating effects of experience provided insights for the development of effective IT acceptance plans (Terblanche & Kidd, 2022). Though there was no intent for the constructs to depend on the effects of other moderators to determine suitable strategies that promote technology adoption, age emerged as a critical moderating factor.

Performance Expectancy

Researchers claimed that the performance expectancy concept is an individual's belief that a system or equipment will enhance how they perform a task. As such, the perceived usefulness of a system influences behavioral and use intentions (Ayaz & Yanartaş, 2020). Similarly, Hooda et al. (2022) explained that performance expectancy was a set of perceived values that are applied to a system that is expected to improve job performance. Accordingly, other researchers expressed that this concept is believed to increase work performance and impacts an individual’s intention to use new technology (Mensah, Zeng, & Lou, 2020). Ayaz and Yanartaş (2020) agreed that performance expectancy in their findings was a significant factor that influenced behavioral intention. Additionally, it was evident that use intention was positively impacted by performance expectancy. Talukder et al. (2019) confirmed in their study, that systems deemed to be useful and beneficial to users' performance have a significant impact on behavioral intention.

Findings from other studies were consistent with previous results which demonstrated that performance expectancy positively impacted technology adoption. Alkhwaldi et al. (2022) claimed that the findings from their research verified that performance expectancy played an essential role on users' behavioral intention to use technology. As such, they suggested that government institutions should consider incorporating feedback from employees when seeking to implement new technologies. The staff's opinion about the usefulness of the system can determine if the technology will be adopted. Accordingly, Isaac et al. (2019) yielded similar results which suggested that employees were more willing to use new technologies if they considered the system to be useful. Notably, they observed that the perception of usefulness caused increased technology usage.

Cichosz et al. (2020) expressed that technologies are perceived as a mechanism that can improve employees' performance. The innovative effects of adopting new technology are seen as a stimulus for user responsiveness and efficiency. However, the rate of technology adoption is often affected by workers who are unskilled or lack the expertise to operate the technology. Use intention is reduced because staff do not perceive the new technology as an enhancement to their performance. Thus, employees tend to resist change and lose interest in adopting any new technology that is introduced in the organization. Notably, it was found that including facilitating conditions such as training programs positively impacted staff expectancy of enhanced performance and behavioral intention to adopt technology.

Performance expectancy significantly impacts technology adoption strategies in government institutions. According to Al Sayegh et al. (2022), performance expectancy is a major factor that influences technology usage in government departments. They claimed that public sector workers are motivated to adopt technology when they are able to identify and experience improvements in their job performance. Thus, short and long-term performances caused an increase in technology usage. Alkhwaldi et al. (2022) agreed that performance expectancy increased the rate of technology adoption. They argued that users' expectations of a new technology are essential to the adoption process. As such, managers in government institutions should pay keen attention to employees' perception of new technologies and carefully manage expectations to achieve positive outcomes. Notably, implementing supportive mechanisms such as training programs improved the performance expectancy of the information system. Therefore, staff will be motivated to accept and use technology. Al Sayegh et al. (2022) confirmed that positive outcomes of performance expectancy were encouraged by leadership support, organizational preparedness, and employee training. That is, the correlations between performance expectancy and facilitating conditions boost technology adoption in government organizations.

Congo and Choi (2022) identified that performance expectancy was also associated with behavioral intention. An analysis of technology adoption in government institutions revealed that technology acceptance depended on a user's belief that the information system would enhance their job performance. Thus, increased acceptance of technologies prompts more usage. In that regard, performance expectancy influenced behavioral intention. Miah and Sentosa (2021) found that public sector workers were willing to adopt new technologies that allow them to improve their productivity. High performance expectations of new systems also improved user attitude toward technology and influenced use intention. Additionally, effective orientation of the new system will allow employees to identify benefits, be more knowledgeable of system features, and be more willing to use technology. Puspitasari et al. (2019) agreed that performance expectancy was essential to the technology adoption process. They also identified that acceptance and use of technology were high among young people compared to senior persons. Younger people are more knowledgeable, receptive to new technologies, and understand the benefits of the various information systems. In contrast, older people usually require more effort to learn the features of the new technology and are sometimes apprehensive about using the system. Thus, in the work environment, technology adoption tends to be slower among older people.

Effort Expectancy

The concept of effort expectancy focuses on the ease with which a system can be used. An individual's use intention is usually determined by their perception of how easily the technology can be used (Hooda et al., 2022). Talukder et al. (2019) identified that effort expectancy positively impacted behavioral intention. Noteworthy, effort expectancy combined the concept with system quality to yield significant results. Alraja et al. (2016) found that effort expectancy was a significant predictor of behavioral intention to use and adopt e-government. In this regard, Isaac et al. (2019) asserted that effort expectancy was one of the main determinants for technology acceptance and use. They also explained that effort expectancy influenced frequent and prolonged usage of the technology. However, Venkatesh et al. (2003) argued that effort expectancy is usually significant in the short term. After initial interaction with technology, the impact of effort expectancy reduces with sustained use. Thus, the first phase of the technology adoption process is crucial for promotion strategies. Additionally, it is important that management select technologies that are user-friendly and require little effort to learn system features.

Mensah, Zeng, and Lou (2020) research was contrary to previous findings. Their results suggested that an individual’s intention to use technology was not influenced by systems that were easy to use. In fact, the research findings revealed that effort expectancy did not have a significant impact on user attitude toward technology adoption. Previous research conducted by Mhina and Johar (2018) concluded that effort expectancy had no effect on behavioral intention. Congo and Choi (2022) further suggested that there was no relationship between effort expectancy and behavioral intention. Accordingly, Alkhwaldi et al. (2022) asserted that effort expectancy did not impact behavioral intention to use technology. User readiness accounted for the non-significant effect of effort expectancy. Hakim and Madyatmadja (2023) noted that effort expectancy did not play a salient role in behavioral intention to accept technology. Nguyen and Süß (2023) also claimed that effort expectancy had little effect on use intention. They explained that the presence of facilitating conditions reduced concerns about the effort required to learn new technologies. Ayaz and Yanartaş (2020) claimed that effort expectancy did not affect use intention. In this regard, careful assessment must be conducted to ascertain the organization's technological maturity before implementing new technologies.

Social Influence

Social influence is described as a group's power to persuade individuals to alter their beliefs, attitudes, and behavior toward accepting new technologies. In some contexts, social influence proved to be a viable predictor of behavioral intention to use technology (Rinjany, 2020). Other perspectives identified social influence as the level of importance placed on others' opinions about adopting technology. That is, individuals are willing to use technology when people they emulate consider the system to be valuable. People will also choose to accept new technologies if they allow them to earn prestige among their peers (Chang, 2012). Blut et al. (2022) had similar findings and explained that social influence may significantly impact technology adoption in environments that place great value on the opinion of prominent persons. For example, when people with a high status in a group readily accept new technologies, lower-ranked members are more inclined to use the system. In that regard, Ayaz and Yanartaş (2020), suggested that top management's use of technology had a significant impact on staff behavioral intention to adopt new technology. Hooda et al. (2022) also supported the role social influence played in encouraging persons to accept and use technology. They noted that peers and family members helped in encouraging the adoption of technology. Isaac et al. (2019) confirmed that social influence had a positive impact on technology usage. They argued that an individual's social network stimulates their interest in using technology. Accordingly, Alkhwaldi et al. (2022) agreed that social influence was an essential factor for behavioral intention to accept and use technology. Therefore, efforts should be made within organizations to include change agents with expert knowledge and experience to promote technology adoption.

According to Congo and Choi (2022), there was a direct connection between social influence and behavioral intention. They suggested that social influence had an impact on users' decision to adopt technology. Notably, social influence was more effective when combined with incentives. Marikyan and Papagiannidis (2023) recognized that in some e-government settings social influence on its own was not a determinant for behavioral intention to use technology. Social influence depended on other variables including gender to have significant impact on employee's intention to adopt and use technology. Nassar et al. (2019) explained that the impact of social influence on behavioral intention can be minimal when there are no moderating factors. They also suggested that age was another moderator that affected the relationship between social influence and behavioral intention. Puspitasari et al. (2019) agreed that social influence has an effect on technology adoption. However, their findings suggested that the moderating effect of gender and age were not always a significant factor on the relationship between social influence and behavioral intention. Nevertheless, these research articles demonstrated that social influence had a positive impact on user's behavioral intention to accept and use technology. They are consistent with previous studies that utilized the UTAUT model to determine the effects of social influence on behavioral and use intentions.

Other researchers such as Mensah, Zeng, and Lou (2020) claimed that the impact of social influence was not significant to users' attitudes toward adopting technology. This was supported by Holzmann et al.'s (2020) results, which demonstrated that social influence was not a determining factor for behavioral intention to accept and use technology. They also argued that users who do not base their decisions on other's opinions are less likely to be impacted by social influence. Miah and Sentosa (2021) also identified that social influence did not have a positive effect on employees' attitude or intention to adopt e-government. Saputra et al. (2021) confirmed that social influence did not positively affect behavioral intention. They explained that social influence was not a good predictor of behavioral intention in organizations with staff that are not technologically competent. That is, low competency results in a lack of confidence and ability to motivate others to use new technologies. Based on the varying results, it is important that organization leaders use a contextual approach to examine the drivers or barriers of technology adoption. They should also be cognizant of their team structures and culture to ensure successful adoption of technologies.

Facilitating Conditions

Facilitating conditions are described as systems that are implemented by institutions to support employees' acceptance and use of new technology (Venkatesh et al., 2003). Several research that used the UTAUT model presented claims that facilitating conditions directly affected behavioral intention to use technology. Employees are usually encouraged to accept technology when organizations provide suitable ICT infrastructure and training to support technology adoption. Providing an enabling environment also fosters trust and sustained use of new technologies (Hooda et al., 2022). Bhaskar et al. (2021) asserted that technical support, financial support, and legal support are necessary components when implementing new technologies. They suggested that these facilitating conditions enabled organizations to build employees' confidence and trust in new information systems. Thus, staff are more encouraged to adopt technology. Ayaz and Yanartaş (2020) argued that facilitating conditions such as effective communication strategies, orientation of new processes, and instructions on system features significantly contributed to users' acceptance of technology (Ayaz & Yanartaş, 2020). That is, activities designed to build staff capacity were predictors for use intention and effort expectancy factors (Mensah, Zeng, & Lou, 2020). Dwivedi et al. (2019) suggested that training and other initiatives encouraged employees to develop positive attitudes toward new technologies. Accordingly, Alkhwaldi et al. (2022) noted that training was one of the most significant facilitating conditions that empowered staff and boosted their confidence to use technology. Facilitating conditions also enhanced performance expectancy as users become more knowledgeable about the technology.

Facilitating conditions applied to technology adoption strategies in government involves the implementation of supportive tools that encourage acceptance and use of e-government systems. According to Bhaskar et al. (2021), facilitating conditions played a big role in the successful implementation and adoption of e-government. Al Sayegh et al. (2022) confirmed that facilitating conditions are key factors in e-government adoption. They suggested that the development of effective governance structures, staff competencies, and technology readiness programs are essential to the rate of technology adoption in government institutions. Congo and Choi (2022) argued that facilitating conditions motivated employees to accept and use e-government. They explained that staff attitude and behavior toward new technologies tend to be positive when support systems are implemented to assist the adoption process. Thus, Hooda et al. (2022) asserted that facilitating conditions have a positive effect on behavioral intention to adopt and use e-government. Empirical evidence provided in previous research validates the positive impact on employees' behavioral intention to accept and use e-government. Alraja (2016) findings suggested that facilitating conditions were the main factors motivating staff to adopt e-government. As such, government institutions were urged to develop support mechanisms that will assist staff performance and build their capacity to use new technologies.

However, Venkatesh et al. (2003) identified that the effects of facilitating conditions on behavioral intention can decrease when effort and performance expectancy factors are dominant. Batara et al. (2017) findings suggested that the impact of facilitating conditions on behavioral intention reduced because persons were experienced and familiar with the support tools implemented by the organization to influence technology use. Other factors can cause facilitating conditions to be an insignificant predictor of behavioral intention to use technology. Talukder et al. (2019) asserted that facilitating conditions did not significantly impact behavioral intention or enable technology use. As such, facilitating conditions were not deemed as good predictors of technology adoption. Isaac et al. (2019) also found that facilitating conditions did not have a significant effect on technology usage. Users' ability to provide their own devices and access freely available training platforms as needed were attributes for the deviation. Saputra et al. (2021) provided further insight that facilitating conditions do not impact behavioral intention when implementation approaches are ad hoc. Lack of coordination in the implementation process reduces the effectiveness of the information system, which is often plagued by obstacles such as compatibility issues, inconsistent performance and complex user interfaces.

Behavioral Intention

The concept of behavioral intention has been represented as a dependent variable that is an outcome of the relationship between other factors. For instance, Ayaz and Yanartaş (2020) noted that performance expectancy was a significant determinant of behavioral intention. Additionally, Hooda et al. (2022) asserted that facilitating conditions were contributing factors of behavioral intention to use technology. Donmez-Turan (2020) claimed that effort expectancy influenced behavioral intention which has a direct impact on an individual's attitude to use new technology. Warsono et al. (2023) confirmed that behavioral intention is determined by a user's attitude toward technology, how they perceived its benefits and difficulty level. Though TAM was used to analyze the data, the results were consistent with previous studies. Nevertheless, there are deviant findings which suggested that behavioral intention to use IT services is not necessarily an outcome of other factors (Talukder et al., 2019).

Use Intention

Several studies asserted that use intention was influenced by other factors such as performance expectancy, effort expectancy, social influence and facilitating conditions

(Hooda et al., 2022). Azamela et al. (2022) identified several factors such as feelings, cognitive skills, influences from regulatory and external forces, and an individual's willingness to explore a new system that impacted use intention. However, Ayaz and Yanartaş (2020) suggested that in most instances performance expectancy was found to be the dominant factor that determines use intention. Additionally, Mensah, Zeng, and Lou (2020) identified in their study that facilitating conditions was a significant predictor of use intention. In contrast, some studies found that effort expectancy was not a significant factor that affected use intention (Ayaz & Yanartaş, 2020). Azamela et al. also suggested that the complexity of a system did not affect use intention.

Technology Adoption at the Organizational Level

Technology adoption is important in all institutions as it provides competitive advantage by enhancing productivity, economic power, efficient processes, and improved resource management (Nwachukwu & Hieu, 2021). Ali et al. (2022) explained that organizational-level technology adoption is driven by internal expertise and the firm's readiness to accept innovation. Graham and Moore (2021) asserted that firm-level technology adoption was guided by the company's capabilities and understanding of technological innovation. The organization's capacity to provide suitable conditions that test new systems is also a key component to the technology adoption process. According to Kesharwani (2020), promoting usage and interest in new technologies requires managers to provide an environment that focuses on developing staff capacity and knowledge about information systems. However, Bolatan et al. (2022) argued that organizational level technology adoption is multifaceted and often complex. Thus, successful adoption of technologies in the work setting relies on sound decision-making. Therefore, achieving technological advantage requires effective technology identification, acquisition, and implementation of relevant solutions that satisfy organizational needs. Prudent actions of top managers to recognize the implications of organizational changes, understand the technology adoption process, and the challenges that affect the promotion of changes are essential to the process. Trenerry et al. (2021) confirmed that technology adoption in organizations was multi-level. They claimed that the digital transformation occurs when factors from the individual, group and institutional levels are integrated. Thus, the factors of employees' perceptions, attitudes, and acceptance of technology combined with a collaborative environment that fosters teamwork, effective leadership, and positive work culture are key to an organization's successful implementation of new technologies.

Solberg et al. (2020) argued that an employee's mindset toward digital transformation was critical to the successful adoption of the new system. Thus, the varied digital mindset of staff should be used to guide the development of technology initiatives. Kesharwani (2020) also identified that successful adoption of technology features was dependent on accurately categorizing employees such as digital natives versus digital immigrants. Being cognizant of the generational differences, characteristics, habits, and level of engagement with technologies will improve the identification, selection, implementation, and use of new technologies in the organization. Ivanov et al. (2020) argued that age was a significant factor in the technology adoption process. Older employees were more likely to view new technologies as a threat and had difficulty acquiring skills to function in an automated environment. Jarrahi and Eshraghi (2019) asserted that the unique capacities of the digital native and digital immigrant play an important role in staff usage behavior. They claimed that digital natives possess inherent technological skills that were developed during their formative years. In contrast, digital immigrants develop skills based on their exposure and interaction with technology during adulthood. Kesharwani (2020) indicated that a digital native and digital immigrant's comfort level with new technologies is dependent on their orientation and frequent engagement with technology. That is, their perception and use of technologies is generally influenced by their level of exposure. He also, suggested that digital natives and digital immigrants accepted technologies from different belief systems. As such, adoption and continued use of technologies will differ. Dittes et al. (2019) confirmed that digital natives and digital immigrants had different comfort levels and attitudes toward technology. Digital natives were more receptive to new information systems and engaged in sustained use. Conversely, digital immigrants were more reserved about the development and implementation of new technologies. In that regard, the technology adoption rate among the digital immigrant group is slower than their counterpart. Thus, the traits and other generational differences of each group are essential in understanding the technology requirements and technology adoption processes involved in introducing innovation in the workplace.

The technology adoption process is dynamic and involves various phases from preparation for technological change to the maintenance of technological use. Saghafian et al. (2021) explained that technology adoption at the firm level has three phases which includes pre-change, change process, and post-change. The pre-change phase represents the as-is of the organization that comprise factors such as culture, structure, leadership, and resources. At the change process phase organizations implement initiatives that support sustained human-technology interaction. During this phase, users develop their perception, capacity and attitude toward technology. The post-change phase of the technology adoption process accounts for the rate of acceptance or rejection of the new information system. In this third phase, the dynamics of how each group in the organization engage with technology are identified. Bolatan et al. (2022) also claimed that technology adoption is a three-phase process. The three stages include identifying existing needs and appropriate solutions, initiating a support system to adopt the solution, and finalizing the implementation and management of the solution. However, Kesharwani (2020) noted that accepting and using technology involves four components 1) initial adoption, 2) sequential belief updating mechanism, 3) feedback mechanism, and 4) habit. He further suggested that successful technology adoption is dependent on the user's initial interaction with and sustained use of the system.

Despite the varied interpretations of the technology adoption process, it is an essential element to a company's development. Nevertheless, the dynamic nature of the process is a complex endeavor that is impacted by the diverse characteristics of employees (Kesharwani, 2020). Accordingly, organizational factors such as values, culture, and hierarchy that are poorly managed can pose challenges for the technology adoption process (Bolatan et al., 2022). The political nature of a company is another factor that could cause conflict during the technology adoption process and negatively impact decision-making (Graham & Moore, 2021). Thus, the technology adoption process requires appropriate knowledge practices (Bolatan et al., 2022), effective decision-making mechanisms (Kesharwani, 2020) and clear understanding of the phases to successfully introduce new technologies in the organization (Saghafian et al., 2021).

Technology Adoption Challenges in Government Institutions

The adoption of new technologies in organizations is impacted by factors that bar or drive the rate at which users accept the implementation of innovative processes and machines. Barriers are described as elements that pose challenges for the advancement, execution, and adoption of new innovations (Zeebaree et al., 2021). Accordingly, barriers are perceived as forces that inhibit technological transformation and impede adoption of new technologies in the organization (Kouhizadeh et al., 2021). Zeebaree et al. (2021) identified the lack of ICT infrastructure as a major barrier for the implementation, and acceptance of the machinery required to deliver e-government services. Further security concerns, weak legislation, lack of coordination between government agencies, and policies were noted as barriers to the introduction and use of new technologies. Culture also played a crucial role in the development and adoption of technologies. Similarly, Kouhizadeh et al. (2021) acknowledged that culture, security fears, ineffective policies, and insufficient hardware and software posed challenges for innovation and user acceptance. They also mentioned that unethical behavior, lack of management support, and complexity of the technology were other factors that barred technology adoption.

Government institutions in developing countries are also affected by technology advancement issues due to ill-planned IT projects that employ ineffective strategies to promote technology adoption. Alassaf et al. (2020) also identified that political factors such as poor leadership support created conditions that were not conducive for e-government development. According to Cinar et al. (2019), successfully implementing innovative projects is dependent on effective processes and support from management. Samsor (2021) suggested that effective leadership was key to the successful implementation of e-government. He further claimed that the lack of stakeholder involvement could delay technology advancement. Mensah, Zeng, and Lou (2020) also identified that factors such as lack of IT infrastructure, staff possessing insufficient IT skills and knowledge, ineffective management, improper legal framework and policies, and high operational cost significantly impacted technology acceptance and use. In that regard, Schedler et al. (2019) argued that the uncertainty regarding cost-benefits prevents decision-makers from investing in new technologies.

Organizations that were not in a state of readiness to implement innovative processes contributed to the slow pace of technology adoption (Mensah, Cater-Steel, & Toleman, 2020). For example, Sinha et al. (2023) found that public institutions were unable to attain sufficient benefits from digital technologies because they failed to adjust their business processes to align with the system. Mensah, Cater-Steel, and Toleman (2020) advised that these institutions created barriers that fueled staff resistance to change. Gholami et al. (2021) asserted that staff resistance to new technologies was a major concern for organizations. Samsor (2021) suggested that staff resistance to change is an issue that should not be treated with scant regard. Cichosz et al. (2020) confirmed that staff resistance can be a great impediment because there is usually a high level of difficulty reconditioning their minds to accept and use new technologies. Further, employees' contentment with legacy systems can also be a deterrent to technology adoption. Thus, individuals play a major role in the successful implementation and use of technologies in organizations. In that regard, Mensah, Cater-Steel, and Toleman (2020) noted that strategies being developed must carefully examine user behavior and attitudes toward technology adoption and incorporate requirements that target individual needs.

Psychological barriers associated with technology adoption could provide useful insights to staff's resistance to change. These psychological barriers were described as a person's perception, attitude, and decision-making process to accept technological changes in their environment. Additionally, an individual's knowledge and skills level were referred to as functional barriers that could prevent the adoption of technologies (Xia et al., 2019). Glyptis et al. (2020) identified that employees who demonstrated low cognition and environmental consciousness were less likely to adopt new technologies. Lewis et al. (2021) emphasized that resistance to change is a major issue in developing countries. He also raised concerns about the lack of partnership, strategic plans, policies and regulations, and financial resources, because these challenges accounted for approximately 85% failure rate in e-government implementations. Toufaily et al. (2021) further suggested that adoption of innovative approaches could also be hampered by ineffective solutions to encourage user acceptance, social influences, perceived benefits, level of training, and technological expectations.

In the Jamaican context, Waller and Genius (2015) identified three main categories of barriers that impacted government institutions including technical, social, and financial issues that hindered technological progress and adoption. They asserted that technical issues consisted of three key factors, namely ICT infrastructure, privacy and security. Notably, social issues included culture and the digital divide. The crippling effects of the various barriers presented have prolonged the slow rate of technology adoption globally, and specifically in developing countries like Jamaica. According to Lewis et al. (2021), Jamaica continues to face challenges such as privacy and security, ICT infrastructure, digital divide, and limited funding. These barriers have prevented the government from successfully implementing technologies that aim to improve efficiency, service delivery, and transparency across the public sector. Haughton and Barnes (2023) also identified several of the previous factors in their study and confirmed that these issues posed challenges to the development of e-government in Jamaica. The factors were categorized as socio-economic, political, security, legal, technological, financial, e-readiness, administrative/leadership, and communication. Jamaica remains burdened by these barriers which demonstrate the country's inability to establish effective IT governance, secure suitable funding for IT projects, employ and retain IT experts, install and maintain adequate IT infrastructure, and sustain continuous progress toward digital transformation. There is also a consensus that the government of Jamaica is unable to identify qualified personnel who can lead the digital initiative. Notably, there is also little activity geared toward e-readiness and establishing effective communication frameworks in Jamaica.

Though the Jamaican government embarked on numerous initiatives over the years to reduce barriers affecting technology adoption and use, the country fails to meet its objectives. The Ministry responsible for IT expansion in the country identified governance and coordination as two major issues that have caused Jamaica to lag behind in technology development. There is a constant struggle with limited resources and personnel to effectively undertake the role of fostering and advancing the technology mandate. Thus, the National Commission on Science and Technology that was established to govern and coordinate innovative programs in government remains ineffective. For instance, ministries, departments and agencies in the public sector are still maintaining separate IT infrastructures with disparate mandates, and agendas. Consequently, the issue duplicates efforts and affects the rate of technology adoption in government institutions (Ministry of Science, Energy and Technology, 2022).

Among the barriers that continue to affect technology advancement in Jamaica, issues such as unstable electricity and internet connectivity (Pangaribuan, 2019). Alexander et al. (2023) identified other barriers including risk resilience, regulatory framework, spectrum management, and access to infrastructure that pose challenges to major initiatives. Insufficient data is another issue that retards development and acceptance of new technologies in Jamaica. McLarty (2021) also noted that a lack of research and development in the IT industry has hampered technology adoption in Jamaica. She claimed that research is essential to the continued growth in the IT sector. That is, data drives innovation and stimulates technological advancement. However, research and development activities in Jamaica only amounts to approximately 0.1%.

Therefore, with little empirical data it is possible that decision-making processes are ill-informed and may yield ineffective results. The Ministry of Science, Energy and Technology (2022) confirmed that the lack of data makes it difficult to assess the impact of science and technology on development and the long-term effects of innovation. The Ministry also expressed that there was a disconnect between the coordinated government initiatives and expected outcomes. In that regard, Lewis et al. (2021) argued that existing barriers that impede technology adoption must be eliminated by the Jamaican government for the country to attain efficiency, and effective service delivery in the public sector.

Technology adoption in government institutions can provide opportunities for inclusion, productivity, economic and social growth, and effective service delivery. ICT adoption over the years has shown results in cost reduction, efficiency, community development, and accountability (Lewis et al., 2021). Empirical findings have confirmed that increased use and acceptance of technology can result in improved productivity. There is also the argument that technology adoption facilitates better-quality products, and diversify outputs (McLarty, 2021). Notably, successfully implemented and accepted e-government services can improve social inclusion (Alexander et al., 2023). Further, governments can leverage technology to reduce corruption and increase transparency. Other advantages may include more citizen participation due to greater convenience and public institutions can reduce the bureaucracy associated with some government services (Waller & Genius, 2015). Thus, countries should strive to increase the rate of technology adoption.

Role of IT Managers in Government Institutions

The responsibilities and functions of IT managers in government institutions are varied with diverse job titles. According to De Tuya et al. (2020), the disparate job titles such as CIO, chief technology officer (CTO), IT specialist, IT Director, IS Manager, and Senior Programmer Analyst may have implications for IT managers' responsibilities in the organization. They explained that diverse roles and responsibilities were disproportionate across institutions which limited the power of some IT managers. For instance, several IT managers had executive-level roles and were involved in making strategic decisions, others had less power and performed general IT tasks. Thus, their contribution to the strategic decision-making process was restricted and sometimes overlooked. Nevertheless, Shalamanov et al. (2020) identified that the IT manager's role and function were essential to the digital transformation process. De Tuya et al. (2020) also expressed that IT managers are critical to the efficient functioning of a business and add strategic value to its overall development. Notably, government CIOs ensure the proper maintenance and management of resources. Additionally, they are key in forging alliances with crucial stakeholders to guarantee adoption and effective use of technology.

IT managers in government institutions should be assigned responsibilities that will allow effective leadership and the development of approaches that drive innovation in the organization. For example, the CIO should be responsible for advising on strategies to design, implement, deploy, and promote IT solutions for business operations. Other functions should include developing and managing digital environments to support organizational requirements, conduct assessments of new technologies and test the viability of the IT platform, and determine the lifecycle and appropriate security measures for the information systems (Shalamanov et al., 2020). Suwarno and Wati (2020) agreed that CIOs should be pivotal in the coordination, planning, implementation, and evaluation of new technologies within organizations. Their role in the development of e-government determines the effectiveness of technology management, the integration of ICT in the institution, and the mechanisms in place to develop the technology skills of staff at all levels. De Tuya et al. (2020) asserted that the CIO's role should be multi-disciplinary and cover the prime areas of business operations, system performance, ICT budget, staffing, and security. The CIO's responsibilities should also incorporate C-Suite functions that enable them to enforce standards and governance practices. As such, Shalamanov et al. (2020) advised that these assigned responsibilities should be guided by six fundamental principles associated with information management to ensure the CIO's effectiveness. These include 1) recognize the role of information management in creating value, 2) position the CIO for success, 3) ensure the credibility of the CIO organization, 4) measure success and demonstrate results, 5) organize information resources to meet business needs, and 6) develop information management human capital.

IT managers are strategically positioned to influence technology adoption in organizations. Liu and Preston (2021) confirmed that CIOs had a unique advantage in influencing technology-based decisions. That is, their role affords them the opportunity to interact with top management and gain their buy-in. CIOs also serve as advocates in their capacity as leaders to encourage change through the entire organization. Additionally, the CIO's strategic position allows them to use their technical knowledge to plan, implement, and drive technology transformation across all groups in an institution. According to Chawla et al. (2023) a CIO's position places them as key influencers in digital transformation. Chan (2021) also suggested that CIOs are key decision-makers with the ability to exercise significant influence on the technology adoption rate within the organization. There is also an expectation that the CIO should guide the type of technology adopted to operate the business.

As the head of IT operations, CIOs are expected to possess the required knowledge and authority to perform functions that impact change. To strategically orient staff about the benefits of adopting innovative processes it is critical that CIOs are knowledgeable about IT systems and business operations. Their technical expertise also enables them to seamlessly transfer knowledge to various groups in the organization and motivate them to accept and use new technologies (Chawla et al., 2023). According to De Tuya et al. (2020), the IT leader's knowledge is one of the essential components for the proper management and diffusion of technology within an organization. They explained that the CIO's keen understanding of operational processes and technology requirements can facilitate alignment between the domains allowing strategic distribution of resources to ensure effective and efficient performance. IT leaders who are able to demonstrate their knowledge help to broaden staff's understanding about meaningfully applying personal technology skills to business processes and foster sustained use of technology in the workplace. Criado and de Zarate-Alcarazo (2022) asserted that education and other sociodemographic factors play an essential role in determining a CIO's perspective of new technologies and the appropriate strategies to promote adoption, Varajão et al.

(2022) agreed that competent technology leaders are the backbones to the successful implementation of IT projects and the subsequent promotion of the new technology. However, they are concerned that some practitioners have no knowledge of technology adoption theories or models. This issue can affect the IT manager's ability to develop effective strategies to promote acceptance and use of new technologies in organizations. Thus, it is critical that the knowledge exerted by CIOs incorporate in-depth understanding of technology adoption theoretical frameworks. This should ensure appropriate identification and careful assessment of factors affecting technology adoption.

Chawla et al. (2023) asserted that the CIO's communication skills is also an enabler to achieve the required support in digital transformation pursuits. As such, effective communication contributes to achieving technology adoption at a quick rate. Other influential characteristics of the CIO include their ability to guide the IT team in delivering agreed outcomes in a timely manner, they are visionaries who can successfully map business requirements to technology solutions, their people management skills should allow them to foster positive attitudes toward new innovations, they should also have the ability to identify and retain people with the requisite skills to sustain digital transformation. Chan (2021) further proposed psychological attributes as factors that affect a CIO's ability to leverage their position as influencers. He introduced the attributes as promotion-focused and prevention-focused. A promotion-focused CIO is willing to take risks and capitalize on various prospects that will aid in achieving desired results. They also engage in practices that are strategic in promoting IT-based projects and strive to identify and apply viable alternatives where issues are presented.

Consequently, the prevention-focused CIO will take a conservative approach to avert risks and hesitate to shift from legacy systems to avoid issues. Therefore, promotion-focused psychological characteristics are ideal for CIOs who aim to exert positive influence and increase technology adoption in their institutions.

Technology Adoption Strategies

An overview of different strategies employed by IT managers to promote technology adoption is critical in understanding the technology adoption phenomenon and the factors that drive success. Suitable strategies are needed to reduce the plethora of barriers and increase the rate of technology adoption in organizations. Thus, Kankanhalli et al. (2019) advised that technology implementation and adoption can only be successful when appropriate remedies are identified and applied to eliminate barriers. In that regard, Toufaily et al. (2021) asserted that effective strategies and policies could fast-track technology adoption. They further explained that technology adoption is successfully achieved when organizations are better equipped and prepared for technology transformation. However, technology readiness requires changes to the organizational, environmental, and technical levels to counter impediments that impact technology adoption. Urbinati et al. (2018) confirmed that organizations must adjust their operations to successfully incorporate innovative processes. For instance, changes must occur at the organizational and process levels to ensure that the institution can effectively accommodate digital transformation. Accordingly, Ivančić et al. (2019) noted that successful digital transformation also demands that organizational changes allow for inclusiveness and involvement of all categories of staff. That is, the implementation and diffusion of new technologies should involve IT experts and potential users from other departments who will interact with the new system.

Successful adoption of new technologies requires well planned strategies that are align with business objectives. Attaran et al. (2019) argued that successful approaches to creating a digital working environment are aligned to business strategies that target potential users and their individual needs. Accordingly, Kaur et al. (2022) emphasized that sustained technology transformation can be achieved in the public sector when technology changes are targeted and embedded in government operations. Thus, strategic approaches should be systematic and holistic to effectively integrate, manage and encourage innovation in government institutions. Other strategies presented in the literature included installing robust ICT infrastructure (Gong & Janssen, 2021), making provisions for better research and development in science and technology (Arundel et al., 2019), facilitate training that address psychology-based issues (Alfaro-Serrano et al., 2021), and enact legislations that will effectively guide implementation of innovative initiatives that aim to promote technology adoption in organizations (Nani & Ali, 2020). To ensure that proposed strategies and solutions are viable, barriers impacting technology adoption must be clearly understood. Additionally, the potential strategies that aim to increase the success rate of technology adoption in today's government organizations require in-depth evaluation. As such, Mu and Wang (2022) suggested that top management should ensure that persons with the required expertise and skills exist on their team if they intend to increase the rate of technology adoption in the organization.

Additionally, it is critical that government institutions establish appropriate mechanisms to assess proposed technology solutions and strategies designed to influence adoption.

Arundel et al. (2019) presented additional approaches such as establishing effective IT governance, develop think tanks that serve as a source of ideas for innovation, foster a culture that supports the creative and innovation industries, and equip top managers with the requisite tools to effectively support and manage innovative processes. They explained that these strategies were key to shaping innovative outcomes in the public sector and boosting the progress of adoption. Ahmad et al. (2020) confirmed that good governance influenced technology adoption in the public sector. Additionally, effective communication was a major factor during the implementation of IT solutions. Mensah, Cater-Steel, and Toleman (2020) indicated that the government should channel significant investments into technology adoption activities and provide suitable resources to ensure the efficient delivery of e-government. Further, Attaran et al. (2019) suggested that sustained acceptance and use of new technologies is achieved when strategies are tailored to the specific needs of the respective organization to achieve efficiency. They asserted that making changes within the context of the business case enhances the rate of the technological output to meet business goals. On the other hand, Alfaro-Serrano et al. (2021) warned that the successful application of strategies may occur in some organizations but do not work in another context. As such, they suggested that interventions promoting the acceptance and use of new technologies should ensure that barriers that hinder technology adoption within their specific context are carefully managed.

The impact of challenges on technology adoption strategies can negatively affect the successful implementation of digital solutions. Saleh et al. (2021) identified that obstacles such as no infrastructure, no trained staff, and security issues affect e-government implementation and weaken the diffusion, acceptance, and use of new technologies. K et al. (2023) confirmed that barriers retard an organization's ability to achieve technology maturity. Accordingly, an organization's level of immaturity tends to result in the development of ineffective technology adoption strategies. This issue also leads to technology adoption practices that are not sustainable. Further, Zeebaree et al. (2021) suggested that the impact of challenges on technology adoption strategies can slow down implementation processes or lead to total failure. In that regard, to successfully achieve digital transformation factors that impede technology adoption must be eliminated. Saleh et al. (2021) also asserted that getting rid of barriers that affect e-government implementation is essential to attain success. Notably, K et al. (2023) argued that organizations should prioritize the eradication of technology adoption barriers if they aim to achieve successful implementation and use of new technologies.

Factors influencing the choice of technology adoption strategies in the Jamaican context vary and include a combination of short and long-term processes. Waller and Genius (2015) suggested that technology implementation in Jamaica could be successful if organizational conditions such as top management support, staff training, and the employment of competent staff exist to facilitate the acceptance and use of new technologies. Haughton and Barnes (2023) also claimed that technology adoption strategies in Jamaica could be positively influence by improved conditions of factors initially identified as barriers. For instance, enhanced socio-economic conditions could result in more openness to adopt new technologies and facilitate equal access to government resources. The installation of suitable infrastructure with robust cybersecurity could provide assurance of quality service that is secure and trustworthy. Accordingly, they argued that good governance structures that facilitate proper communication channels could help to drive the successful implementation and acceptance of e-government in Jamaica. Further, it is essential for the government of Jamaica to reduce duplicated IT processes across ministries, departments, and agencies to achieve improved coordination. The adoption and use of e-government could also be fast-tracked if employees and citizens were motivated and empowered to accept new technologies.

Technology Adoption in Jamaican Government Institutions

Current state of technology adoption in Jamaica's government institutions is still in its infancy despite numerous initiatives to achieve digital transformation. Jamaica established a national development plan that outlines the country's commitment to attain a society driven by technology. The document highlights the critical role technology plays in advancing economic growth across various sectors and industries. Technology is also viewed as a commodity that can be integrated in government development programs to advance public sector services, social, economic, and environmental conditions (Alexander et al., 2023). Based on current strategies, Jamaica has experienced relative growth in the acceptance and use of technologies. Some of the advancements are due to ongoing improvements in the country's ICT infrastructure. Increased innovations in

Jamaica also resulted from government technology initiatives (Ministry of Science, Energy and Technology, 2022).

Previous technology adoption initiatives and their outcomes in Jamaica have resulted in the country's continuous push to achieve a technology enabled society. Digital transformation in Jamaica started in 1990s spanning over three decades. The main priority of this initiative was to integrate technology in the public sector and improve efficiency. In that regard, ICT policies designed during the period highlighted technology as an important development tool. The introduction and use of new technologies were supported by numerous policy solutions (Lewis et al., 2021). For instance, the Science and Technology policy developed in 1990 focused on developing productive sectors with an aim to improve economic and social development. The policy also facilitated the establishment of the National Commission on Science and Technology (NCST) and its funding subsidiary, the National Foundation for Development of Science and Technology. The main responsibility of the NCST is to coordinate the advancements, use and adoption of technologies in government institutions. The National Industrial Policy was also instrumental in the identification and promotion of science and technology integration as an integral component for growth and efficiency in organizations (Ministry of Science, Energy and Technology, 2022).

Public sector modernization also influenced the amendment and enactment of several acts and regulations to guide the implementation of e-government. These include the 2007 Electronic Transaction Act, the 2010 Cybercrimes Act, and the 2011 Interception of Communication Act that governs online transactions, system usage, and transfer of electronic data, respectively (Waller & Genius, 2015). Other regulatory frameworks and governing bodies included a five-year strategic plan for IT in 2000, and the Spectrum Management Authority, which was formed in 2001 to regulate radio spectrum in Jamaica. Accordingly, entities such as the Fair Trading Commission and the Office of Utilities Regulations were entrusted with the responsibility to regulate the telecommunications sector. By 2005, the Universal Service Fund was established to undertake IT projects that increased the availability of internet access in schools, public libraries, and post offices (Brown & Thompson, 2011). Further, the government of Jamaica repositioned eGov Jamaica in 2013 as the authoritative body to implement ICT across government (Ministry of Science, Energy and Technology, 2022).

The various regulatory frameworks and legislations led to numerous public/private partnership initiatives that resulted in some improvements in the ICT industry. According to Brown and Thompson (2011), partnerships established by the government of Jamaica with key stakeholders in the public and private sector enabled the installation of electronic portals that facilitated ecommerce in the trade industry. Waller and Genius (2015) highlighted other projects that bolstered the advancement of technology integration in the public sector. The list of ICT programs included competency training for top managers and staff, installment of the government wide area network, upgrading of IT infrastructure in some government institutions, and employment of technical experts in agencies and departments to support operations. Previous technology adoption initiatives were seemingly effective in achieving set mandates. However, Alexander et al. (2023) noted that there were no effective mechanisms in place to test the outcomes of the initiatives. Additionally, Jamaican government institutions do not have a comprehensive reporting system that provides sufficient data to examine usage and the rate of technology adoption in the sector.

Comparison of technology adoption levels in Jamaican government institutions with global benchmarks has revealed that the country is still lagging behind in technology development. McLarty (2021) argued that the rate of technology adoption in Jamaica is slow when compared to developed countries and other Caribbean territories. She noted that the country is ranked 92 out of 133 countries. Jamaica's rate of adopting new technologies impacts its ability to improve productivity. As such, the country received a low economic complexity rating. Economic complexity is a method that uses the rate of technology adoption to determine the level of knowledge within a society and its capacity to produce diversified products. Thus, limited use of technology across the industries affected product development and diversification. Accordingly, low income also has a negative impact on economic complexity which continues to prevent Jamaica from attaining technological maturity. Lewis et al. (2021) confirmed that technology adoption levels in Jamaica are persistently low despite public/private partnership training interventions. Alexander et al. (2023) also asserted that Jamaica's e-government strategies are ineffective because ICT policies and plans do not adequately address initiatives aimed at boosting access to technology.

Relationship of the Study to Previous Research

Some of the research articles reviewed used a qualitative approach to explore the strategies employed to achieve successful adoption and implementation of new technologies. Accordingly, a few of the qualitative studies applied the case study design with at least one utilizing a multiple case study approach. The remaining qualitative studies presented alternate perspectives on the factors that influenced technology adoption. Other research designs that may be employed are quantitative or mixed methods. The articles reviewed so far identified at least fourteen studies relating to my research topic that used the quantitative approach to examine ICT adoption in government and other organization settings. At least three of the quantitative studies were conducted using the UTAUT theoretical framework. Additionally, five studies with direct focus on government entities used the mixed method approach. Further, three studies that used a qualitative approach conducted systematic literature reviews to ascertain the factors and strategies that influenced ICT adoption in organizations.

Qualitative research presents five (5) designs namely ethnography, narrative, phenomenological, ground theory and case study, that could be applied to my research study. However, a critical assessment of each approach identified the associated advantages and disadvantages that helped to determine the appropriateness of the designs' procedures (Creswell & Poth, 2018). Accordingly, key criteria such as studying the phenomena in a particular organization or bounded setting, conducting in-depth exploration of the phenomenon in a real-life context and exploring strategic interventions that are transferable to similar context guided the selection of a case study design. Further, the multiple case study was selected as the best suited approach to conduct the research instead of the single case study (Tomaszewski et al., 2020). That is, the multiple case study allowed for comparative research on the effects of policy and practice across a number of organizations (Alpi & Evans, 2019). In that regard, it was determined that a case study design would adequately address the research problem (Creswell & Poth, 2018).

Case studies can help to gain insights for the research, as it allows for rich data to be collected that could explain the “What” and “Why” (M. K. Alam, 2021) of the specific IT problem that some IT managers lack strategies to promote technology adoption in Jamaican government. The data collected in a case study environment provides useful information from practitioners in the field. Thus, it presents an opportunity for in-depth investigation of the problem (Kelly, 2016). That is, shared experiences, opinions and knowledge from IT managers is expected to provide a better understanding of industry standards and practices in the field. Thus, my study yielded valuable benefits from examining multiple cases. There, is also evidence that sufficient research is needed to assist the rate of technology adoption in Jamaica. As such, my research findings can assist with identifying effective strategies that can be used to guide practitioners' best practices and help decision-makers develop appropriate policies that will influence technology adoption in government institutions, because they are usually poised to drive change in society. The adoption of new technologies is critical to the continued development in Jamaica.

Transition and Summary

Section 1 introduced the foundation of the study and the background of the problem. Additionally, a brief overview of the general and specific IT problem was presented in the problem statement. The section also provided information on the purpose statement, nature of the study, and research question. The conceptual framework that was used to guide the research and the interpretation of the data was also discussed in Section 1. Accordingly, other subsections including definition of terms, assumptions, limitations, delimitations, and the significance of the study were presented. Notably, this section made provisions for the review of the professional and academic literature that are relevant to the study.

Section 2 features subsections that provide insight on the researcher's role during the data collection process, and the participants who were selected to participate in the study. Accordingly, the research method and design will be discussed in detail. Additionally, a description of the population and sampling technique will be presented. Further, this section discusses research ethics, data collection instrument, technique and the organization of the data. Noteworthy, Section 2 also presents a description of the data analysis technique, the reliability and validity of the research.

Section 2: The Project

This section outlines my role as a researcher in the data collection process. Accordingly, the section provides details about the participants and describes the sampling technique. Additionally, details of the research method and design are presented. Also, research ethics, data collection procedures and analysis of the data are discussed. Notably, the reliability and validity of the study is examined.

Purpose Statement

The qualitative multiple case study explored the strategies used by IT managers to effectively promote technology adoption in Jamaican government institutions. This study included a population of IT managers and practitioners in Jamaican government institutions who are involved in implementing new technologies, adoption strategies and innovative services. As such, the implication for positive social change is that by improving the rate of ICT adoption in government institutions, the delivery of e-service will improve, and the public will be provided with equal access to government resources.

Role of the Researcher

The role of the researcher in a qualitative study is significant in the data collection process. That is, the researcher acts as the main data collection instrument and is responsible for the interpretation and analysis of the data. Accordingly, researchers are tasked with the responsibility of clearly describing the research domain for the readers to understand the context and relevance of the study (Dodgson, 2019). In that regard, it is essential that I present all the core elements of my study to ensure that the context is clear and that it meets the required research standards that establish credibility.

Consequently, a key role of the researcher is to ensure that the data collected is trustworthy and reliable. Thus, the qualitative researcher must employ practices such as reflexivity to apply rigor and maintain quality (Dodgson, 2019). Additionally, the researcher has a responsibility to indicate their positionality in the study and provide a sense of authenticity during the data collection process. This approach improved interactions between the researcher and participants, which encouraged truthful responses and reactions to questions. Accordingly, in addition to eliciting information from participants, the researcher has a responsibility to reduce bias by not imposing their views. That is, the participant should be the focal point during the data collection process (Thurairajah, 2019). Therefore, when I conducted the qualitative multiple case study, it was important to clearly declare my intentions and perspectives as a practitioner. I also ensured that a conducive environment was developed to encourage truthful responses from participants. Additionally, the relevant techniques, including member checking and triangulation, were utilized in order to attain credibility and reliability.

I have worked as a practitioner in the information technology field for approximately three years in a Jamaican government institution. One of the main duties was to develop innovative products that would be deployed across the island. My tenure in this role coincided with the COVID-19 pandemic. As a result, five virtual services were developed, all of which are still being used post-pandemic. Additionally, prior to my direct involvement in IT, I assisted in spearheading an automation project and the adoption of open-source software to enhance business operations and service delivery. The project impacted the staff I supervised, other managers, and employees across the island-wide network of service points. Additionally, it helped to increase public access to information and resources aimed at enabling community development.

Researchers must be cognizant of the ethical implications that can arise during their study. As such, it is important to engage in practices that establish trust between them and the participants. Therefore, in the case study setting, it was essential that I pay keen attention to the selection of research strategies and questions that were used in the interviews. This is critical because it influences the quality and reliability of the data collected (M. K. Alam, 2021).

With ethics being a crucial component to the research process, it is also important to adhere to the protocols outlined in The Belmont Report (Office for Human Research Protections [OHRP], 1979). This helps to establish an ethical baseline that should ensure the integrity of the data. It also provided a framework for the research that allowed the establishment of trust and rapport with participants. As such, an interview protocol was developed to guide the sessions. Additionally, the Belmont Report facilitated the protection of participants' rights. That is, it presented a set of guidelines that include respect for persons, beneficence, and justice (OHRP, 1979). As an assurance that these principles were adhered, during the sessions it was important for me to elicit consent and made it clear to the participants that their involvement was voluntary. They were also informed that they were allowed to end the interview at any time. Accordingly, I ensured that prior to the start of the interview the participant was assured that their privacy was protected. Additionally, it was prudent at the end of the data collection and analysis process to make the results and initial analysis available to the participants.

The member checking or participant validation method was used to reduce researcher bias. This is a common method that can be employed in a case study setting to mitigate bias and appropriately represent the views of the participant (Creswell & Creswell, 2018). The process strengthens the credibility of the research findings by providing the participants with an opportunity to review the results and interpretations of the data (Lindheim, 2022). In that regard, they are able to verify the accuracy of the data and provide clarification as necessary (Birt et al., 2016). Accordingly, the method helps to establish transparency as it aims to appropriately represent the views of the participants. It also supports ethical practices which help to improve the trustworthiness of the study (Lindheim, 2022).

The semistructured interview protocol establishes a prescribed pattern that serves as a guide for the interview. The format presents introductory questions that help to create a rapport. These are followed by questions that focus on the data being collected. Additionally, the interview protocol usually ends with a wrap-up question (Creswell & Creswell, 2018). Notably, Yin (2018) asserts that this structure is suited for the case study design. Accordingly, the questions outlined in the protocol serve as prompts when posing questions to the participant. Further, the protocol helps the researcher maintain focus on the data collection process.

Participants

The intended participants were selected using purposeful sampling. According to Creswell and Creswell (2018), using purposeful sampling in qualitative research guarantees the selection of persons who have knowledge and expertise that qualify them to respond adequately to questions posed in the interview. As such, IT managers and specialists employed in government institutions in Jamaica were identified as potential participants in the study. These participants were not actively serving in the military.

Further, the chosen participants met the Institutional Review Board (IRB) ethical requirements. These indicated that the participant should not be in active military service, should not be supervised by me, nor will they be compensated for their involvement in the research. It is important that these criteria are met in order for the research to be given approval by the IRB (Creswell & Poth, 2018).

After receiving IRB approval, several strategies were employed to gain access to potential participants. As such, I approached government entities in Jamaica to engage IT professionals who were integral in the implementation of new technologies and ICT adoption decisions. For greater success, I used the gatekeeper approach to establish contact with participants. That is, the individual or association/company with direct access to IT managers was contacted to assist with identifying and gaining access to participants. At least one company that I approached has the responsibility for hosting ‘tech talks’ that update all public sector practitioners about various IT projects being undertaken by the government and the potential involvement or impact on each institution. When persons were identified, the participating companies provided a list with email addresses. Emails were sent to each person inviting them to participate. Additionally, in gaining access to potential participants, I made an effort to build trust while encouraging the IT managers to participate. These methods help to identify and encourage suitable individuals who are knowledgeable about the research topic to participate in the study (Creswell & Poth, 2018).

When participants confirmed via email or by telephone call that they were willing to be a part of the research, meeting links were sent via email based on an agreed-upon time for the interview session. Conference calls were the main modality for each session. However, face-to-face interview options were presented to participants based on their availability. The option to conduct the interviews in a suitable space, such as the interviewee's office, would have allowed greater privacy and a more conducive environment for open discussion. It is usually encouraged that interviews are arranged in an environment that allows the participant to be comfortable (Yin, 2018). It was important that participants were comfortable enough to freely speak about the topic.

The Zoom online platform was the main option for participants. It allowed a convenient space for participants to discuss various issues without restrictions. This perceived non-threatening environment is a viable method in gaining access to individuals that may have busy schedules (Creswell & Poth, 2018). As such, the Zoom conference software platform was used to host the interviews. Where in-person interview was preferred arrangements were made to visit the case site.

Research Method and Design

The research methodologies that could be applied to the study are qualitative, quantitative, and mixed methods (Scalcău, 2021). Each method is generally associated with distinct data collection techniques and a design that determines how the research question is connected to the empirical data (Yin, 2018). An examination of the research methods and associated designs indicated that the qualitative approach presented a basis to gain relevant insights that will address the IT problem (Creswell & Poth, 2018). Additionally, the multiple case study was deemed appropriate to explore the strategies used by IT managers to effectively promote technology adoption and service innovation.

Method

Qualitative research was selected as the most suitable method for this study. This methodology allows in-depth exploration of strategies used by IT managers to promote the adoption of new technologies (Tomaszewski et al., 2020). Additionally, it provides an interpretivism approach that allows for a thorough understanding of the main factors that affect technology adoption from different perspectives. Further, the method generally collects textual data with a flexible structure that can be constructed or reconstructed as needed (Creswell & Creswell, 2018).

For this study, the quantitative method, which generally requires the collection of statistical data, was not selected. The approach focuses on examining the relationships between variables and measuring each to test hypotheses. As such, it would not allow for the descriptive analysis that is required to adequately address the research problem (Creswell & Creswell, 2018). Also, the mixed methods approach was not chosen for this study. This mixed methods approach utilizes both quantitative and qualitative data to answer research questions and hypotheses (Timans et al., 2019). Though it may provide a holistic view of the problem, the combination of qualitative and quantitative aspects of the mixed methods is not required for this study because the explorative nature of the research will concentrate on collecting data that provides a rich description of the various factors that impact technology adoption. Additionally, the small sample size would not yield any significant statistics to conduct analytical testing of the phenomenon. As such, the approach was not found appropriate for the research (Creswell & Creswell, 2018).

Research Design

Three of the five qualitative research designs, including case study, ethnography, and phenomenology, were considered for the study. An assessment of the designs indicated that the case study would be most suited for the study. Thus, the case study design was chosen due to its ability to allow the problem to be explored in a real-life context (Yin, 2018). It also provides an in-depth understanding of the problem. Notably, the case study design generally focuses on the context of the case, which allows a better opportunity to learn about an organization, its procedures, and policies that promote technology adoption (Tomaszewski et al., 2020). Additionally, it incorporates the use of multiple sources in order to ascertain pertinent evidence that will answer the research question. In that regard, this design facilitates the use of interviews, questionnaires, observation and document reviews as part of the data collection strategy (Creswell & Creswell, 2018). Further, the multiple case study was selected as the preferred format. A multiple case study was chosen over a single case study because it permitted the comparison of different strategies and policy decisions that impacted ICT adoption in government institutions. This design also presents an in-depth view of key factors that influence the success or failure of ICT adoption in organizations (Alpi & Evans, 2019).

Consequently, the phenomenological and ethnographic designs were not selected. A phenomenological design produces a description of lived experiences about the phenomenon as told by the individual involved in the scenario (Tomaszewski et al., 2020). According to Creswell and Poth (2018), phenomenological design is mainly utilized in social and health sciences and focuses on explaining the shared human experiences of a group or individual. Thus, researchers are usually interested in collecting data that will provide a detailed description of the experience that clearly presents a common understanding of the phenomenon as viewed by the participant (Creswell & Poth, 2018). Additionally, the ethnographic design focuses on the culture and ideology of an organization or group. In that regard, ethnographic design usually explores the cultural aspects of a group. For example, the language, behavior pattern and belief system of the group (Tomaszewski et al., 2020). Therefore, data collection concentrates on gathering information that describes the learned patterns of behavior, beliefs and values (Creswell & Poth, 2018).

Population and Sampling

The purposeful sampling technique was used to identify potential participants. This sampling method was preferred for the qualitative study because it ensured that the participants selected possessed certain knowledge and expertise that allowed them to provide meaningful responses that answered the research question (Creswell & Creswell, 2018). Thus, the target population for my multiple case study included IT managers and specialists from three (3) government institutions in Jamaica. These IT professionals were employed by the ministry department and agencies that were identified as cases for the study. The IT managers were responsible for leading ICT projects with successful adoption among staff. Accordingly, each participant was expected to have at least 10 years' experience in the IT industry. The intended size of the population was 12 participants: four participants from the ministry department and four participants from each of the agencies.

The rationale for the population size and number of participants is that multiple case studies can be time-consuming and are resource-intensive. As such, it is appropriate for a student researcher to identify at least three case studies for their study. Further, plans to do more than ten interviews can be excessive for a case study (Yin, 2018). Notably, a maximum of five case studies is recommended for a given research. This should be an appropriate amount that allows for the identification of themes and cross-checking of themes between the cases (Creswell & Poth, 2018). Accordingly, the estimated number of IT managers that were available from each government institution was 2 or 3 personnel based on the managerial structure of IT units, which usually comprise a director and two deputy directors. Ministry departments usually have four or more directors specializing in different aspects of technology. As such, the intended number of 12 participants was selected from the three government institutions for the case studies.

In qualitative research, data saturation is important and should be attained by the study. Accordingly, sufficient information relevant to the study should be obtained during the data collection process (Creswell & Poth, 2018). To reach data saturation, each person was asked to provide comprehensive information on the topic until no new data was received from the participants. The data collected was done primarily through interviews with only four participants. Other sources of data, including relevant documents and artifacts, that were collected as part of the data collection process. Notably, the data collection activity staggered over an extended period and prematurely ended when it was identified that the remaining potential participants were unavailable. Nevertheless, the respondents who participated provided valuable insights and were given an opportunity to review the transcribed and interpreted interview script. This member checking activity allowed participants to validate the data collected. Thus, the intent of the member checking process was to improve the accuracy and reliability of the data that was collected. Additionally, original documents from the case organization related to technology implementation and adoption strategies were cross-checked until no new information emerged. Despite the small number of respondents, the study achieved data saturation.

Ethical Research

The research involved the voluntary participation of individuals from select government institutions. Additionally, no incentives were offered for participating in this study. In that regard, ethical considerations were made to protect the rights of each participant. Thus, the principles outlined in the Belmont Report were adhered. These principles include respect for individuals, justice, and beneficence (OHRP, 1979). The regulations outlined in the Jamaican Ministry of Health Guidelines for the Conduct of Research on Human Subjects was also observed (U.S. Department of Health and Human Services et al., 2021). Accordingly, the research was conducted in accordance with all Walden University standards which dictated that participants must be kept safe from harm. These included guides, checklists, and forms that outline the research ethics processes and the proper procedures for soliciting consent from participants. In addition, the proposed research adhered to ethical requirements, which received approval # 06-20-24-1053721 from the Walden University Institutional Review Board.

To demonstrate respect for participants' rights, they were able to freely decide if they wished to participate in the study or not. Participants were properly informed via email about the research through a consent form. The information on the form advised participants about the purpose of the research. Additionally, the form provided a summary of the research project, the potential risks, benefits, and consequences associated with the research. The form also indicated the role of the participant and what should be expected during the interview. Accordingly, participants were advised that their participation was voluntary, and they had the right to opt out of the research at any time. All information provided on the consent form was clearly explained to each participant. If participants agreed to take part in the research, they were asked to indicate their consent via email. However, at any time during the interview, participants were able to indicate that they no longer wished to participate in the study. Participants were also assured that their confidentiality would be safeguarded (Taquette & Borges da Matta Souza, 2022). It was also asserted by Chimentão and Reis (2019) that unwanted exposure should be avoided at all costs and participants' anonymity should always be protected. Therefore, each participant or institution was referred by a code (e.g., Participant A or Company X). This ensured that no identifiable information was used in the study. It is important that researchers keep the names of participants and organizations safe from disclosure (Chimentão & Reis, 2019). Accordingly, interview protocols were developed to incorporate relevant information that guided the process. As such, participants were advised of their rights during the interview process. Thus, prior to the start of the interview, the participant was informed about the protocols (see Appendix A). The interview protocol outlined the procedures that were arranged in sections. During the process, I confirmed the participants' consent to participate in the study. This was followed by a brief introduction of myself and the purpose of the study. Additionally, the ethical conduct of the research was discussed in the context of the study. Each participant was advised that the session would be recorded. At this juncture, confidentiality consideration was explained, and the participant was reminded that they could discontinue the process at any time as they saw fit. Participants who agreed to continue were asked a series of open-ended questions that ranged from demographic to content specific queries. The interview process culminated with a closing question that solicited additional comments on the topic.

All data collected were encrypted and stored on my Walden University Microsoft 365 SharePoint student account. A backup of the data is also stored on an encrypted flash drive that is locked in a safe for 5 years to protect the privacy of participants and case organizations. Additionally, all documents, specifically files containing personal identifiable information relating to the research were password-protected. Noteworthy, I completed the CITI Program certification as an assurance of my understanding about the importance of conducting ethical research that involves human beings (see Appendix B).

Data Collection

Instruments

For this study, I was the only researcher and the main collection instrument. In qualitative studies, the researcher is a vital component and is viewed as the most important instrument in the data collection process. Consequently, the value and quality of the data collected are dependent on the researcher's competence and knowledge of the topic (R. Roberts, 2020). Accordingly, the interview questions were the primary source of collecting data for the research. Using the semistructured interview method as the data collection tool supports the researcher's efforts to acquire detailed information (R. Roberts, 2020) and valuable insights to answer the research question (Creswell & Poth, 2018). Interviews have also been identified as the ideal data collection tool for explorative research because they provide opportunities to ask probing questions during the sessions. Probing questions often reveal useful details that are unexpected, new, and present a deeper understanding of the problem (Jain, 2021). As such, sub-questions that were derived from the central research question were used to develop an interview protocol to guide the process (see Appendix A). It is always good practice to develop interview protocols as it helps the interviewer to remain focused (Creswell & Poth, 2018). The guide also provides some level of structure for the interview process and transparency of the method (R. Roberts, 2020).

Additionally, the interview was conducted using the qualitative case study design procedures. Interviews are predominantly found in case study designs and are essential in the data collection process (Yin, 2018). Therefore, the interview was semistructured and utilized open-ended questions to get relevant responses from the interviewee. Furthermore, the open-ended interview questions are expected to be directly related to the topic to ensure that only data relevant to the study is collected. That is, in qualitative research, it is typical for interview questions to be open-ended with the intent to gain insights from respondents' opinions and views (Creswell & Creswell, 2018). Notably, during the interview process, some observations of participants may be conducted as applicable.

Data Collection Technique

The semistructured in-depth interviews were conducted with IT managers and specialists from two government institutions. For this research, the Zoom conferencing software was used to conduct interview sessions that lasted approximately 14-20 minutes. Where an in-person interview was the preferred choice for the participant, arrangements were made to visit the case site. As such, the interview would have facilitated one participant at a time in a private setting at the respective case site. The interview protocol would also be used in the process (see Appendix A) and explained to the interviewee before starting the line of questioning. Consent was obtained from the respondent regarding their participation in the exercise and the recording of the session. This is good practice and a recommended procedure for researchers because it ensures that respect is observed when conducting the interviews. Additionally, it is important that the protocols are explained, and consent is received from the participant before proceeding with the interview (Creswell & Poth, 2018).

The data collected from the interviews answered the research question. Accordingly, the data provided insights into the factors that affect ICT adoption. Further, the research garnered useful information on the strategies used by IT managers to influence staff acceptance and the effective use of new technologies. Also, their opinions and thoughts gave an in-depth view of the reasons for an organization's failure or success in adopting ICT. The interview sessions were recorded using multiple recording methods, which include the recording feature on the Zoom platform that captured audio-only and the voice recorder app on my mobile device. This increased the accuracy and the redundancy in recording the interview. Where applicable, traditional notetaking was done to record participant responses. In more modern interview settings, researchers are increasingly using technology to conduct and capture data elicited by interviews. As such, Creswell and Poth (2018) noted that researchers generally use reliable equipment and various online applications to conduct and capture sessions. Thus, both sound and video recordings are done to ensure that there is no loss of data. However, taking notes during the interview can be very useful especially in cases where the online/electronic device may fail.

The data collection process was followed by the transcription of the interview data. Noteworthy, the TurboScribe software was used as the main method to transcribe the audio files. The Microsoft dictation tool was used as the secondary method of transcribing the data. Accordingly, the transcript was reviewed multiple times to facilitate editing as necessary and ensure that all the data was captured verbatim. The transcription of the recorded sessions is a crucial exercise that must be conducted with much precision.

In that regard, data must be transcribed word for word and reflect any pauses, overlaps, and even words that may seem unimportant (Creswell & Poth, 2018). Further, it is important that transcripts are thoroughly checked to minimize any unnecessary errors that may have occurred during the transcription phase (Creswell & Creswell, 2018). As a part of the transcription process, member checking was conducted to ensure that the information captured was accurate. Reviewing the transcript and preliminary analysis allowed participants to question my interpretation of the data. Notably, to support the data collected from the interviews, other existing documents and artifacts involved in the ICT implementation and adoption process were collected and examined. Also, if participants opted for an in-person interview, I would have used the opportunity to observe them in their workspace with the intent of gaining a firsthand view of how they operate and administer procedures that influence technology adoption. Thus, the use of multiple sources should achieve data triangulation that is expected to improve the validity of the data collected. I also paid close attention to how my role as a researcher impacted the data collection process. Therefore, I reflected on my attitude during the interview sessions, my worldviews, past experiences, and other factors that might affect the validity of the data collected. In qualitative research, it is important to establish techniques that will ensure the validity and reliability of the data collected. Therefore, researchers should incorporate various techniques such as triangulation, member checking, and reflexivity in their study (Coleman, 2021).

Data Organization Techniques

At the end of the data collection process, several techniques were used to organize the data. As such, systems including an Excel spreadsheet and ATLAS.ti software were used to organize the data. These database systems allowed the tracking of themes as they emerged during the analysis. Additionally, recorded audio data, transcripts, organizational documents, and reflexive journal information, captured in the database system, were categorized for analysis. Notably, after the data collection process is complete, it is essential that each piece of data be properly organized to facilitate easy review. Accordingly, ensuring that the data is organized also helps to reveal patterns in the data set (Leedy & Ormrod, 2010).

Further, to ensure that the identity of each participant was secure, a standard of anonymity was applied to the dataset. That is, unique tags in the form of pseudonyms were used to label the responses received from participants. Accordingly, all electronic data collected was encrypted and stored on the Walden University Office 365 SharePoint student account. For added security, a backup of the data is being stored on an encrypted flash drive. Additionally, other paper-based recordings such as transcripts, field notes, and reflexive journal, along with the flash drive, will be locked up for 5 years in a safe to ensure that the privacy of all participants is protected. When the designated 5-year retention period has expired, the data will be disposed of in accordance with the stipulated guidelines.

Data Analysis

The data analysis process for this qualitative multiple case study research employed a series of established steps and methods that allowed me to logically and sequentially address the research question. In that regard, the steps that guided the analysis process included (1) transcription of the data, (2) arrange all facts in a logical order; (3) identify categories and clusters within the data and put into groups; (4) examine key documents and other relevant data to determine specific meaning that may be related to the case; (5) identify themes and patterns that provide broad categorization of the case; and (6) synthesize the data and draw relevant conclusions (Leady & Ormrod, 2010). Accordingly, three methods, namely thematic analysis, triangulation, and coding, were utilized to achieve rigor and trustworthiness of the findings. Janis (2022) claimed that methods such as thematic analysis and coding were appropriate to construct meaning and attain dependability. Thus, Trainor and Bundon (2021) explained that thematic analysis is the process of recognizing themes by identifying, analyzing and reporting patterns within the data collected. As such, the thematic analysis method has the capability of applying rigor to the analysis process. In addition, Janis (2022) asserted that thematic analysis also helps to establish consistency when determining meanings and interpretating the data.

Further, triangulation was also applied to achieve rigor and validity. This method is acknowledged in the literature as best practice for case studies and is known for its capability to corroborate findings (Farquhar et al., 2020). According to Moon (2019) and Farquhar et al. (2020), there are four main types of triangulation techniques. Farquhar et al. (2020) indicated that these include data, method, theory, and researcher/ investigator triangulation. Data triangulation is commonly used in case study research to achieve convergent validity. That is, data is collected from a variety of sources via one data collection method with the aim of gaining a comprehensive perspective of the phenomenon. However, Moon (2019) explained that method triangulation was like data triangulation, but it usually uses multiple research methods to collect data. In the case of the researcher/ investigator triangulation, the technique employs multiple researchers to collect and analyze data. Farquhar et al. (2020) identified that theory triangulation tends to utilize several theories in order to gain deeper insights from the data collected. For this research, I used data triangulation. The different sets of data sources, such as participants' responses and supporting documents from the organizations, were collected after the interview process. This is suitable for the intended study as data triangulation is sufficient to facilitate data saturation (Janis, 2022). Method triangulation was not suitable because I only used one research method for the data collection process. Also, the researcher/ investigator triangulation was not appropriate because I am the only researcher who conducted the study. Additionally, this research used one theory to guide the study; as such, the theory triangulation was not applicable.

Additionally, applying coding techniques to the analysis process allowed for a more efficient and focused review of the raw data. As a result, the coding process allowed rigor and provided evidence of validity for the study (K. Roberts et al., 2019). Other relevant techniques, such as reflexivity, were also used to help establish and strengthen the reliability and validity of the study. According to Holmes (2020), reflexivity is critical to the research process, and it is recommended that researchers use this approach to construct, identify, critique, and clearly detail their positionality. Positionality, which reflects the researcher's worldview, must be openly articulated because it has a tendency to influence the results of the research (Holmes, 2020).

To assist the analysis process, the ATLAS.ti software tool was used to identify themes and sub-themes within the data. As such, data sets were imported into the software to facilitate the sorting and grouping of the data. The software properly organized the documents and data to determine patterns. Notably, the ATLAS.ti software allowed me to apply codes and further examine the data for meaning and context. In that regard, the ATLAS.ti software enabled me to have a better understanding of the data. Thus, adequate analysis and interpretation of the data helped with the extraction of rich descriptions that were relevant to the research question. Therefore, choosing ATLAS.ti software was an ideal tool for a qualitative study because it was versatile in constructing theme categorization, and theory building of large volumes of data to facilitate in-depth analysis of facts collected through interviews and other sources of documents. Qualitative data analysis software allows researchers to efficiently manage the vast data sets to generate relevant themes and sub-themes (M. K. Alam, 2021). Further, qualitative analysis software is also recognized for its ability to apply systematic coding to allow the arranging, grouping, and comparing of codes within subgroups (K. Roberts et al., 2019).

The data coding process involved multiple activities, such as utilizing the constructs of the UTAUT conceptual framework to generate code labels. The conceptual framework was used during this process because it provides predefined codes that help with the initial formation of groups. The conceptual framework also assisted with identifying key concepts and verifying that the data collected was adequately answering the research question. In this regard, utilizing a predefined list of code helps to keep the analysis process focused and guides the coding process in a systematic way that better recognizes the concepts that are pertinent to the results (Skjott Linneberg & Korsgaard, 2019). Additionally, marking and assigning codes in the transcript should help to identify phrases or sentences that are relevant to the study. The assignment of code in the transcript is important to the categorization process because it helps to establish patterns in each segment of data. Notably, K. Roberts et al. (2019) advised that it was good practice to highlight codable units/text that may be considered for analysis during the initial reading of the transcript. According to Yin (2018) the technique of marking and grouping coded segments in the transcript is also very useful in the formation of categories. Consequently, Lester et al. (2020) also suggested that the technique helps the researcher become familiar with the data sets while preparing the data so it can be imported into the data analysis software. Thus, the ATLAS.ti software was used to apply additional coding and categorization of the data sets. This allowed for the identification of additional themes.

Reliability and Validity

It is imperative that qualitative research demonstrates rigor and assures its readers that the findings can be trusted (Coleman, 2021). As such, a few considerations are necessary to ensure that the methodology of the study is robust (Quintão et al., 2020). Thus, qualitative research must fulfil the criteria of reliability and validity to address concerns of trustworthiness. In that regard, reliability focuses on the appropriateness of the research method and how prescribed procedures should be applied to ensure the integrity of the findings (Coleman, 2021). That is, reliability incorporates protocols that are established to guide research activities. These protocols provide rules and techniques, such as developing an interview guide, recording the interview, applying codes to responses, and utilizing systematic data analysis methods to conduct the data collection and interpretation of the results (Quintao et al., 2020). Accordingly, validity generally concentrates on the credibility of the descriptions, interpretations, conclusions, and any arguments presented to justify the results of the study (Coleman, 2021). Hayashi et al. (2019) asserted that validity helps to establish the quality of work and agreed that it is a vital component in determining if research is acceptable and accurately represents the phenomenon being studied (Hayashi et al., 2019). Therefore, reliability and validity are essential as they allow qualitative studies to demonstrate that sufficient rigor was applied to the research process (Coleman, 2021). Noteworthy, reliability and validity in qualitative research can be accomplished via credibility, dependability, confirmability, and transferability. Additionally, data saturation can also be used to determine if reliability and validity are achieved (Hayashi et al., 2019).

Credibility

To establish credibility for my research, I utilized member checking to assist with confirming that the data collected during the interviews fully represent the participants' views. The member checking process also helps to verify the accuracy of preliminary interpretations of the findings. Additionally, data triangulation was used to assist in corroborating the results and meaning extracted from the data. According to Coleman

(2021), member checking that is also referred to as respondent validation, is a useful technique employed by researchers to ratify their understanding of the data. Also, it provides an opportunity for respondents to scrutinize the data for correctness. Janis (2022) also noted that data triangulation aids in identifying similar meaning from the different data sources. According to Yin (2018) the data triangulation method that generally utilizes multiple sources of evidence helps to enhance the quality of the findings. Thus, utilizing those methods allows a greater tendency for the research to be rated as a credible contribution to the body of knowledge.

Dependability

For this study, I followed a set of procedures that included the development of an interview protocol to guide the data collection process (see Appendix A). This interview protocol facilitated a semistructured interview format and incorporated the Belmont Report's three core principles of justice, respect for persons, and beneficence (OHRP, 1979). Accordingly, the interviews were primarily conducted using the Zoom conferencing platform. This platform facilitated the audio recording of the sessions and allowed the preservation of the verbatim responses provided by the participants. The recordings added an element of authenticity to the data collected. Where in-person interviews were preferred, the smartphone recording app would have been used to capture the responses during the session. Further, all data collected from the interviews were transcribed, coded, analyzed, validated by respondents, and checked against other data sources to identify patterns and meaning. Secure storage of the data was also a priority to ensure the integrity of the information. Notably, in qualitative research, dependability is concerned with consistency in the execution of the research process. Thus, it assures that the research was conducted using prescribed procedures that were systematically followed at every phase of the study (Golafshani, 2003). That is, there is consistency in the research process, and the steps used to produce the results can be repeated (Rose & Johnson, 2020). Additionally, checking the data collected from interviews against other data sources can accomplish data triangulation, which is a method used by researchers to achieve dependability (Janis, 2022).

Confirmability

To ensure that confirmability is attained, I provided thick descriptions of the procedures used to conduct the study. For instance, a detailed explanation of the purposeful sampling technique used to select the persons who participated in the study helped to provide context for the data collection process. That is, the use of purposeful sampling ensured that the persons participating in the study were able to provide relevant responses that answered the research question. Further, I provided thorough details of responses collected during the interview to ensure that participants' views were accurately represented. Additionally, I maintained a journal to document my decision-making process, the way I conducted the interviews, my perception of the data being analyzed, and any biases that may be present based on my familiarity with the government environment and the phenomenon being studied. This journal helped with my reflection and explained how my role as the researcher contributed to the conclusions extracted from the data. According to Yin (2018), researchers should endeavor to apply high standards when describing their methods because it is necessary in establishing confirmability. Further, Creswell and Poth (2018) asserted that carefully documenting research activities ensures confirmability because it allows an audit trail of the research process. Further, Rose and Johnson (2020) claimed that confirmability can be attained by providing a rich description of the data collected from the participants. Clearly detailing interview responses allows readers to develop an appreciation and understanding of the phenomenon from the respondents' perspective. To ensure confirmability, it is also beneficial to include the researcher's reflections in the research report because it presents a sense of transparency and strengthens the conclusions derived from the study. That is, reflexivity provides details of the researcher's positionality, how their perceptions impacted the research process, and how their beliefs influenced the interpretation of the data.

Transferability

Transferability generally means that the results derived from the study can be applied to other contexts (Rose & Johnson, 2020). In that regard, it must be noted that transferability is heavily dependent on researchers providing thick description of the study (Creswell & Poth, 2018). As such, it is imperative that all contextual details that may be available about the case and the phenomenon are properly documented and reported in the research. Additionally, it is essential that the research process, analysis, and findings are clearly detailed. Thus, it is expected that the provision of thick description will allow readers to have a contextual understanding of the topic (Rose & Johnson, 2020) and provide them with a comprehensive view of the findings that they can relate to other settings (Creswell & Poth, 2018).

Data Saturation

Achieving data saturation requires the utilization of various techniques such as developing well-defined open-ended interview questions, conducting enough interviews, employing member checking, and data triangulation methods. Notably, the open-ended questions prompt participants to provide detailed responses that are relevant to answering the research question. As such, I used the opportunity to ask probing questions as appropriate with an aim to gain further insights on the topic which revealed unexpected data that was useful in understanding the problem. Further, I applied thematic analysis to identify pertinent patterns and meaning within the data. Thematic analysis utilizes a coding technique to classify all the themes that may be revealed during the analysis process. Thus, to attain data saturation the ATLAS.ti software was used to identify any additional themes in the data. Several themes were repeated, and the frequency confirmed that data saturation was reached despite the small number of respondents. Janis (2022) informed that data saturation is significantly impacted by dependability and, as such, obtaining the same can influence the trustworthiness of the study. To gain data saturation from the interview process, Braun and Clarke (2021) suggested that at least 12 participants should be interviewed. That is, responses from this number of people are generally ideal to provide sufficient evidence that is relevant to the research topic. Though ideal, they reminded that data saturation is the point where no new information is produced from responses and documentation. In this regard, they asserted that accomplishing data saturation increased the validity of the research (Braun & Clarke, 2021).

Transition and Summary

Section 2 restated the purpose statement, which highlighted that the qualitative multiple case study aims to explore the strategies used by IT managers to effectively promote technology adoption in Jamaican government institutions. Accordingly, the subsections that addressed aspects of the data collection process, the role of the researcher, and the participants selected to participate in the study were introduced. The section also described the research method and design that was used to conduct the research. Further, details were presented on the research ethics, data collection procedures, and how the data was analyzed. Accordingly, the reliability and validity of the study were discussed.

Section 3 presents the outcomes of the study. This section provides thick description of the data that were collected from the semistructured interviews. In this regard, an overview of the study is presented along with subsections that address the findings of the study. A detailed discussion on the applicability of the findings, reflections, recommendations for action and further study, and implications for social change were also presented. Accordingly, the conclusions of the study were summarized to highlight salient points that were identified in the results.

Section 3: Application to Professional Practice and Implications for Change

Overview of Study

The purpose of this qualitative multiple case study was to explore the strategies used by IT managers to effectively promote technology adoption in Jamaican government institutions. The targeted population for the research study comprised IT managers with 10 years or more experience in the IT industry who led ICT projects with successful adoption among staff. I used purposeful sampling to identify potential participants from one government ministry and two agencies. Two out of three institutions agreed to facilitate the study. Each entity provided contact information for the participants. Therefore, the intended 12 potential participants were reduced to eight experienced potential participants. After receiving IRB Approval # 06-20-24-1053721 on 6/20/2024, potential participants were invited to participate in semistructured interviews via Zoom for 20 minutes. Only four persons responded. Interviews were conducted between January 30, 2025 and April 8, 2025 via Zoom with four IT managers from one ministry coded as GOJINS1 and one agency coded as GOJINS2. However, interview data for one participant was abandoned, because they had less than 10 years' experience in the IT industry. Table 1 presents the profile of the institutions.

Table 1

Case Profile and Data Sources

Institution	Structure/size	Potential participants	Document data
GOJINS1	Island-wide	4 IT managers	Reports, newsletters, staff bulletins, policies
GOJINS2	Single corporate office	4 IT managers	Strategic plans, reports, terms of reference documents for ICT projects

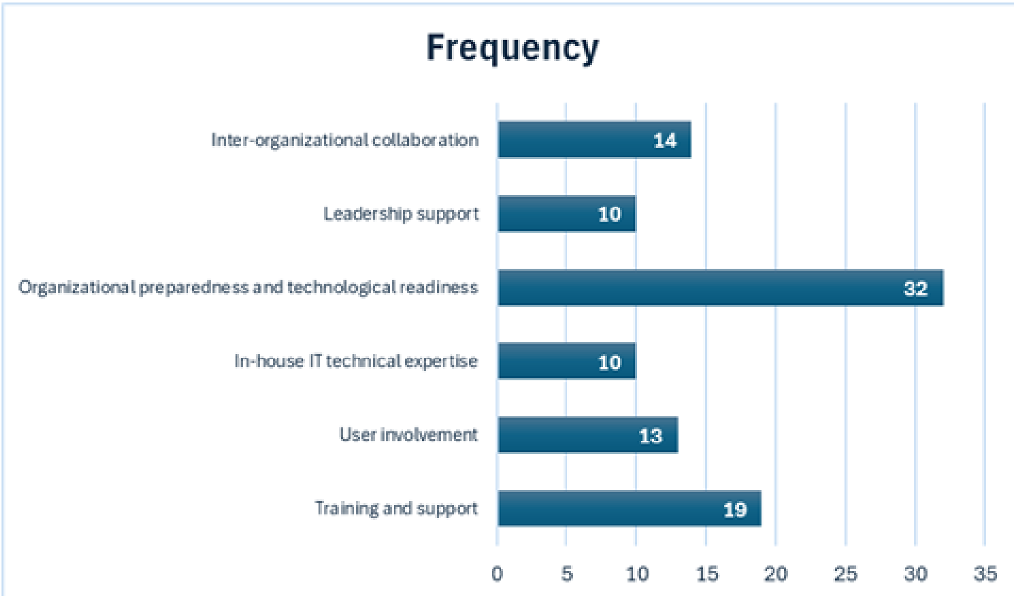
I collected data from the Zoom interviews and used Microsoft Word Dictate tool and the TurboScribe website to transcribe the audio recordings verbatim. Data was also collected from organizational documentation related to the research topic that was provided by the institution or publicly available. These documents included strategic plans, policies, reports, newsletters, and staff bulletins. The constructs from the UTAUT2 conceptual framework that guides the research were used to develop the codes which aided the data analysis process. I also used the ATLAS.ti qualitative data analysis software to assist the data analysis process. Six main themes that emerged from the interview data and documents comprise some of the strategies used by IT managers to effectively promote technology adoption: (1) organizational preparedness and technological readiness, (2) training and support, (3) inter-organizational collaboration, (4) user involvement, (5) in-house IT technical expertise, and (6) leadership support.

Presentation of the Findings

The research question for this study was: What strategies do IT managers use to effectively promote technology adoption in Jamaican government institutions? I conducted semistructured interviews with each participant via Zoom. The interview sessions were 14 to 20 minutes long. Audio recordings for each session were captured by the Zoom recording feature. The voice recorder app on my mobile device was also used for redundancy. The transcribed data from the interviews were reviewed and analyzed. Documents related to the research question were also reviewed. I also conducted the member-checking process, providing participants with a copy of the verbatim interview transcript via email. All participants were given the opportunity to review and validate the transcripts for accuracy and provide feedback on my interpretations. For ease of reference, the transcript contained the main research and sub-questions along with the corresponding responses. After the member-checking process, transcripts were uploaded to ATLSA.ti for analysis. Six main themes emerged from the data analysis process. Figure 1 presents the main themes from the data analysis.

Figure 1

Main Themes and Frequency

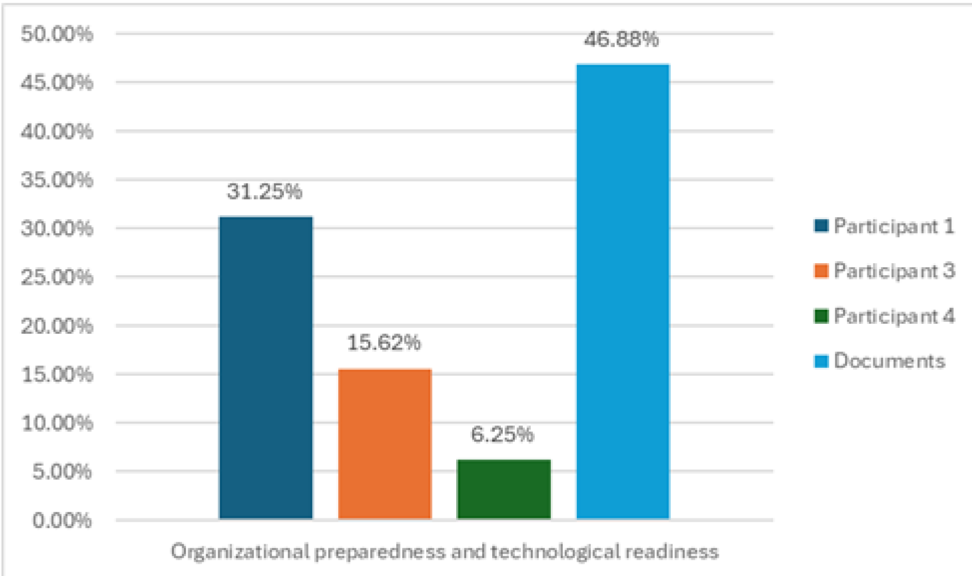


Theme 1: Organizational Preparedness and Technological Readiness

The predominant theme that emerged from participant responses and the documentation reviewed was organizational preparedness and technological readiness. The theme comprises two key strategies, carefully assessing ICT solutions to ensure that they meet users' needs and providing appropriate ICT infrastructure and tools. I identified these strategies as facilitating conditions that lay the foundation for the organization's readiness to adopt new technologies. As depicted in Figure 2, the frequent mentions of organizational preparedness and technological readiness in responses and documents highlighted that this theme was an essential component for technology adoption.

Figure 2

Responses to Organizational Preparedness and Technological Readiness



The participants' responses accounted for 53.12% of the statements that included organizational preparedness and technological readiness as important factors in the technology adoption process. Participant 1 noted that the internet service provided by government partners which directly connected state schools to the fiber network, was welcomed because it provided a stable connection. When users are equipped with reliable internet connections, they readily use technological tools that are provided (Participant 1). Accordingly, Participant 3 emphasized that careful assessment of ICT solutions was core for preparing organizations for digital transformation. They recommended that it was essential to have proof of concept before selecting IT solutions. Additionally, IT solutions should not be procured based on requirements alone, and thorough evaluation of the product should be conducted prior to implementation (Participant 3). Participant 3 also asserted that assessing new technologies ensures that the system meets users' needs. This strategy gives assurance that IT solutions will be suitable and effective for their intended use. As such, users will be willing to accept and use the new technology when it is introduced to the organization (Participant 3).

Further, Participant 4 indicated that providing appropriate ICT equipment for divisions and units ensured that staff were able to function efficiently. For example, when a new division is implemented, it is expected that all the necessary infrastructure, including electronics, will be installed for the division to conduct the required operations. They also mentioned that staff generally welcomed the installation of ICT infrastructure such as networks. Therefore, ICT projects that aim to improve the infrastructure receive great support from stakeholders, and as such, implementation is relatively easy (Participant 4). The remaining 46.88% of the theme appeared in reports and strategic plans.

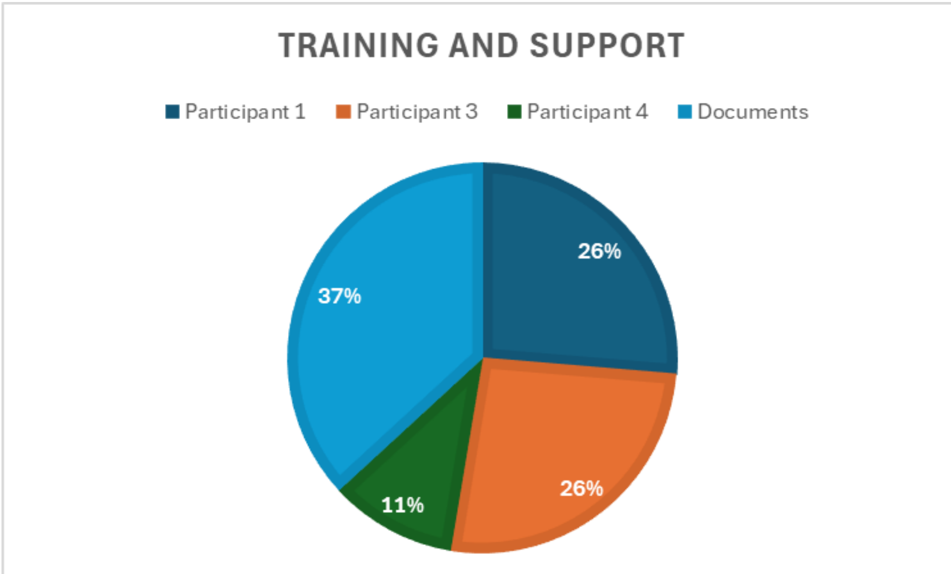
Organizational preparedness and technological readiness used as a strategy to improve the rate of technology adoption aligns with the UTAUT2 conceptual framework. According to Al Sayegh et al. (2022), facilitating conditions is a primary factor that impacts the rate of technology adoption in an organization. They confirmed that organizational preparedness was a key determinant for technology adoption in government institutions (Al Sayegh et al., 2022). Rinjany (2020), also provided evidence that facilitating conditions was vital to influencing people to use technology. He suggested that providing ICT tools to support technology adoption correlates to high acceptance and use of new technologies (Rinjany, 2020). Ali et al. (2022) further strengthened the claim that an institution's technological readiness was essential to the technology adoption process. They asserted that the installation of a robust IT infrastructure improved an organization's capacity to successfully achieve technology adoption (Ali et al., 2022). Other studies reported that it was important to assess ICT resources to ensure alignment with business and user needs. Effective evaluation and management of ICT system components enables the organization to maximize the use of new technologies (Matayo et al., 2023). Thus, the findings suggest that careful evaluation of ICT solutions is important to the technology adoption process. Additionally, the provision of appropriate ICT infrastructure and tools will encourage technology adoption in government institutions.

Theme 2: Training and Support

The training and support theme included three strategies: training, user support services and user awareness sessions. I considered these strategies as facilitating conditions. The reports and strategic plans presented training and user support initiatives as major activities in the organizations' digital transformation. Participants also placed strong emphasis on the theme which suggested that training and user support were significant to the technology adoption process. Figure 3 represents the frequency of the training and support theme from respondents and documentation.

Figure 3

Frequency of Training and Support



Participant 4 highlighted the importance of training and support to encourage the use and acceptance of new technologies. The participant noted that, "educating the individuals is always a good thing." They also indicated that, "It's more awareness." That is, staff awareness was an important component to promote technology adoption among employees. Participant 3 suggested that user support was critical to the technology adoption process. They pointed out that creating a safe space for users to experiment with new technologies without fear of making mistakes can facilitate learning and provide continuous support for them to engage with the technology in a low-pressure setting. Participant 1 expressed that it was important to train staff when new technology is introduced in the organization. They shared that during the COVID-19 period the institution introduced a virtual private network (VPN) to staff which allowed them to work remotely. The VPN and the new method required to connect to organizational resources from home was unfamiliar to staff. Thus, it was necessary to conduct training with staff to ensure that they understood the technology and the login procedures (Participant 1).

Training and support were represented in the literature as a core technology adoption strategy. Al Sayegh et al. (2022) affirmed that employee training was necessary for the adoption of new technologies. They also confirmed that training boosted technology use (Al Sayegh et al., 2022). According to Trenerry et al. (2021), upskilling employees was essential for effective technology transformation. They suggested that technology adoption was more successful in organizations that trained their staff to use digital tools (Trenerry et al., 2021). Alkhwaldi et al. (2022) agreed that training staff to use technology tools has a positive effect on the adoption and use of new technologies. Their findings also suggested that user support encouraged staff to accept technological changes (Alkhwaldi et al., 2022). Saghafian et al. (2021) confirmed that training increased the rate of technology adoption among staff. They explained that improving employee ICT skills minimizes “technostress” and resistance (Saghafian et al., 2021, p. 13). Thus, training was essential, especially for users who may not be technologically savvy. Providing clear, simple instructions and ensuring that the training environment is supportive can help users feel more at ease with new technologies.

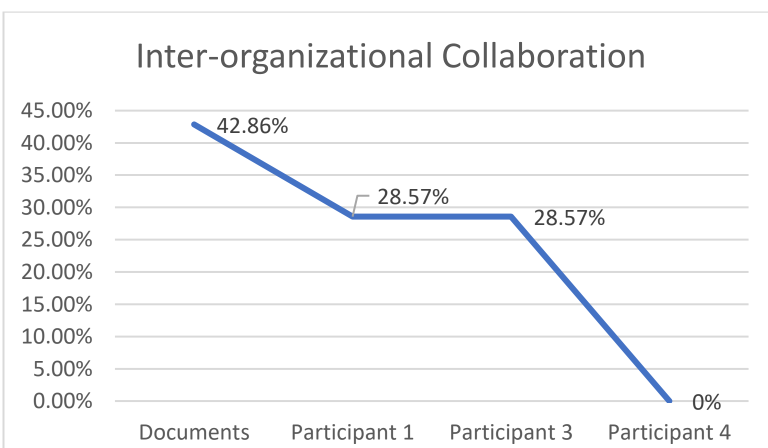
Theme 3: Inter-Organizational Collaboration

The inter-organizational collaboration theme was a significant strategy among participants. The theme was also prominent in the documentation as depicted in Figure 4.

Inter-organizational collaboration is a facilitating condition that leverages an organization's digital transformation plans. Participant 1 informed that his institution sought partnership with various entities to reduce technology deficiencies. They explained, through partnerships with international and other government entities, their institution was able to implement cloud-based services and provide laptops for users. The same participant highlighted that during the COVID-19 pandemic his institution benefited from inter-organizational collaboration. That is, "during the COVID now we had partnered with international technology suppliers to roll out the workspace suite... the educational and meeting platforms" (Participant 1). Accordingly, Participant 3 prides their entity's involvement in collaborating with other government institutions to achieve digital transformation. The participant explained that their institution through its operating arms is one of the entities that provide technological support to other government ministries, departments, and agencies (Participant 3).

Figure 4

Frequency of Inter-Organizational Collaboration



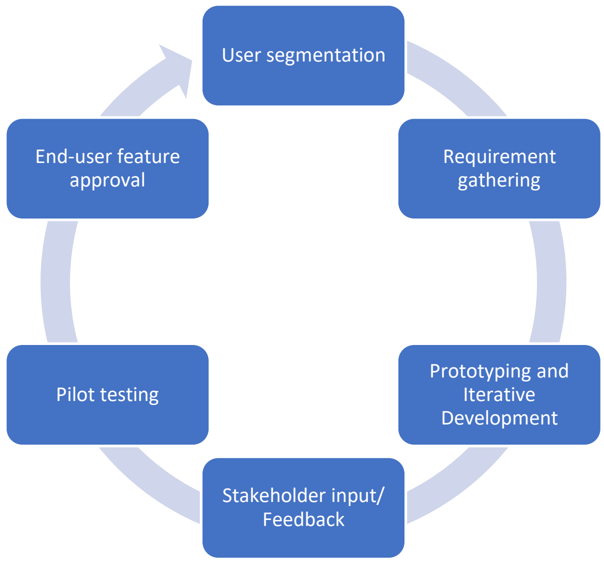
Bhaskar et al. (2021) claimed that public-private partnerships was an efficient strategy to increase technology adoption among staff in government institutions. They explained that the inter-organizational collaboration approach fostered efficiency, effective management of resources, knowledge sharing, and empowered staff to accept and use new technologies (Bhaskar et al., 2021). Foguesatto et al. (2024) confirmed that inter-organizational collaboration was an effective method for companies to attain digital transformation. They asserted that the knowledge sharing process, complemented by resources such as ICT infrastructure and other assets, plays a pivotal role in improving a company's digital maturity (Foguesatto et al., 2024). Accordingly, Adomako and Nguyen (2024) suggested that inter-organizational collaboration facilitated technology transfer that provided unique opportunities for organizations. They argued that an increase in collaborative pursuits ensured that technology solutions were effectively integrated into organizations (Adomako & Nguyen, 2024). Therefore, inter-organizational collaboration improved an institution's capacity to adopt new technologies.

Theme 4: User Involvement

The user involvement theme was deemed important among participants and in the documentation. That is, 53.85% of the references were from participant responses, and the documentation accounted for 46.15%. The theme identified as a social influence was discussed in the context of solution development. Participants presented various strategies, namely user segmentation, requirement gathering, prototyping, iterative development, stakeholder input/ feedback, pilot testing, and end-user feature approval. Figure 5 represents the cyclical process of user involvement.

Figure 5

Strategies Applied to the User Involvement Process



Participant 3 stressed the importance of segmenting users as it provided an opportunity to tailor products that suited specific needs. They explained, "So our customers fall in many different categories… with this, I mean, mix of age group, then we have to be able to tailor our messages to these different customer base… our user base." Participant 3 further expounded on the need to engage users in the early stages of system development that involve requirement gathering, prototyping and iterative development. Notably, Participant 1 informed that user input was essential when developing new systems. They asserted that, after the technical team identifies a suitable in-house design to address a specific problem or goal, employees, managers, and stakeholders are engaged to provide input for the new technology. Their involvement encourages buy-in during the implementation stage (Participant 1). Participant 3 agreed that user input was key to the acceptance and use of new technologies because they tend to develop a sense of ownership. They claimed that "…when you develop it with them, and they have quite a bit of input in it… they feel invested in it." Therefore, involving employees in the technology implementation process influenced acceptance and use.

Pilot testing and end-user feature approval strategies reinforced the significance of the user involvement cycle in the technology adoption process. Participant 3 highlighted that the pilot testing phase allowed users to understand how the system works, by making mistakes and learning through trial and error. Testing software solutions with users in a test lab environment provides an opportunity to help them understand the new technology (Participant 3). The participant also emphasized that when users are allowed to contribute to the development of the system features, they tend to perceive that it is easy to use, making them more likely to accept the new technology. Thus, they argued that users should be allowed to assist with the development of system features. Users are likely to accept the solution when they participate in the approval and sign-off process for features included in the system (Participant 3).

Bin Saif et al. (2021) suggested that it was critical to engage users in the early phase of system development. For example, users should be involved in the planning and requirements gathering stage to secure their support and acceptance of the solution. They also insisted that the feedback provided during user involvement was essential to the system development lifecycle because it improved the users' level of satisfaction with the solution (Bin Saif et al., 2021). Thus, feedback in the user involvement process is a vital strategy to get buy-in from staff and encourage the use of new technologies (Jackson & Allen, 2024). Bin Saif et al. (2021) also supported user involvement in the design and test stages of system development. The researchers explained that users who were involved in the design phase demonstrated greater interest in the new system (Bin Saif et al., 2021). Additionally, users become comfortable with new technologies when they are able to test the system before implementation (Jackson & Allen, 2024). Leso and Cortimiglia (2022) agreed that involving users in system development resulted in acceptance and created a sense of ownership. They also noted that during the testing phase, users gained understanding of system features and identified the benefits of the system (Leso & Cortimiglia, 2022). Notably, Fischer et al. (2020) confirmed that user involvement fostered positive attitudes toward new technologies. Particularly, engaging older users in system design increased technology adoption because their involvement evoked ownership (Fischer et al. 2020). The literature reinforced the importance of user involvement and its impact on technology adoption.

Theme 5: In-House IT Technical Expertise

Data from interview sessions and documentation suggested that the In-house IT technical expertise was a significant feature in the institutions. The responses accounted for 70% of the theme's frequency and 30% of the documentation. The in-house IT technical expertise theme was identified as a facilitating condition. Strategic plans and reports obtained from the case institutions highlighted the relevance of in-house experts and continued efforts to upskill the team for the successful implementation of ICT projects. Respondents also emphasized the importance of in-house experts and their role in the technology adoption process. Participant 3 indicated that his institution had in-house experts in all areas of ICT. The technical experts implemented needed infrastructure and developed software systems to facilitate technology adoption. Supporting users to understand new technologies was also a critical component when systems were developed or procured. Participant 3 explained that proprietary software requires more effort to integrate, thus, experts such as business analysts are needed to prepare relevant documentation and communicate with software providers to ensure that specification requirements are met. Their role is also crucial to the digital transformation process because they are an intermediary between users and technical specialists. That is, they are capable of translating users' input and the requirements in a format that can be used by the technical team to refine IT solutions (Participant 3).

The structure of IT departments and their functions were also critical to digital transformation efforts. Participant 1 noted that their ICT unit comprised three branches, infrastructure, user support, and business development. Each branch was responsible for managing different aspects of ICT. For example, the programmers in the business development branch created and implemented software solutions. They also ensured that the solutions were scalable, user-friendly, and could integrate with existing systems (Participant 1). Notably, a diverse team of experts was ideal for ensuring proper integration of solutions and providing comprehensive support that accelerated technology adoption. Participant 4 who had expertise in ICT infrastructure and user support services, confirmed that colleagues with varying expertise were needed to assist with developing solutions and integrating new technologies. Participant 3 also indicated "we have a large cadre of developers here." They highlighted the importance of having varied experts in the institution to provide ICT support. Thus, it was assumed that internal technical expertise positively impacted technology adoption.

Ninčević Pašalić and Cukusic (2024) advised that investing in in-house IT expertise was essential for organizations embarking on digital transformation. This team of IT experts provided valuable support to technology adoption. Additionally, the in-house experts improved organizational preparedness and technical readiness (Ninčević Pašalić & Cukusic, 2024). Ali et al. (2022) agreed that internal expertise correlated to an organization's technology readiness. They confirmed that organizations with internal IT experts were more technologically advanced with a high rate of adoption. Therefore, the researchers advised that institutions aiming for successful technology adoption should ensure that IT teams possessed appropriate levels of competencies to facilitate change and influence the acceptance of new technologies (Ali et al., 2022). In that regard, Trenerry et al. (2021) stressed the importance of upskilling internal IT experts. They explained that the fast-paced changes which occur during digital transformation required a team that kept abreast of the dynamic environment. Internal experts acting on outdated knowledge and skills can hinder technology adoption progress (Trenerry et al, 2021). Thus, internal IT teams that undergo constant training to enhance their skills generally ensure successful implementation and adoption of new technologies (Ninčević Pašalić & Cukusic, 2024).

Valtonen and Holopainen (2025) provided affirmation that organizations with in-house experts were more effective in promoting technology adoption. They asserted that staff were more receptive to learning about new technologies from internal IT staff.

Though institutions may outsource some IT activities, it was imperative to recruit the right talents with capabilities to effortlessly integrate new technologies and encourage staff to use technology (Valtonen & Holopainen, 2025). Further, Trenerry et al. (2021) argued that it was vital for IT teams to include an array of technical skills. They suggested that a multidisciplinary team was ideal to support innovative initiatives. Teams with diverse backgrounds in IT were more effective in implementing projects and promoting technology adoption (Trenerry et al., 2021). Similarly, Ali et al. (2022) noted that IT teams with multiple professional specializations were able to deliver seamless technology integration. They also stressed that IT professionals with highly specialized knowledge influenced technology adoption among staff (Ali et al., 2022). Notably, organizations with internal technical expertise had a higher rate of technology adoption.

Theme 6: Leadership Support

Based on interview responses that accounted for 90% of theme reference, participants felt that leadership support was a requirement for the successful adoption of new technologies. The documentation also mentioned the theme, which portrayed leaders as technology advocates. The leadership support theme was classified as a social influence. Participants presented several engagement approaches used by leaders to provide crucial support for ICT initiatives and technology adoption. The engagement approaches employed by leaders included top-down, technology-driven, ethical, visionary, and transformational as depicted in Table 2.

Table 2

Leadership Support Approach

Engagement approach	Organizational-level factor	Types of support	Adoption challenges addressed	Outcomes
Top-down	Culture	Set goals and priorities, Forerunners in technology adoption	Laggards, Clinging to Traditional Processes	Buy-in
Technology-driven	Change management	Advocate for technology, Foster innovation	Resistance	Improved acceptance, Digital transformation
Ethical	Accountability	Hold persons accountable	Refuse to use technology	Increased use
Visionary	Collaboration	Foster collaboration	Lack of resources and Skills	Infrastructure implemented, ICT tools available
Transformational	Trust	Build trust	Fear, Suspicion	Improve confidence in using technology, Improved acceptance

Participant 4 shared that the leadership support approach that yielded results in their institution was the top-down method. They explained that the top-down approach to technology adoption was embedded in the institution's culture and relatively effective. The same participant further indicated that the application of the top-down approach was essential to the successful adoption of new technologies. However, Participant 3 did not fully support a top-down approach to technology adoption. They expressed concern that a top-down approach culture caused suspicion among staff, and a such was seen as a threat.

For example, “if they've had bad relationships with leadership in the organization before, it is almost always seen as leadership introduced this new thing to get rid of some of them” (Participant 3). Thus, Participant 3 suggested that a suitable approach was to create an environment of trust. They argued that it can be difficult to work against culture, however, developing trust among staff was a useful strategy to overcome cultural roadblocks and cultural constraints (Participant 3). In that regard, the transformational approach was ideal for minimizing fear and suspicion among staff. While Participant 4 agreed that it was important to introduce new technologies using methods that reduce fear and foster a sense of comfort, they insisted that technology adoption may fail if leaders were not forerunners with the ICT initiative. That is, if there is no buy-in from leadership the IT team would experience challenges to implement new technologies (Participant 4).

Leadership support was also important for identifying collaboration opportunities that provided resources and knowledge sharing to institutions. Thus, Participants recognized that leaders should be visionaries to provide strategic direction and forge partnerships. Participant 1 informed that one of the leaders from his institution recognized that inter-organizational collaboration was needed to aid digital transformation initiatives. They explained that after identifying various technology gaps the head of the entity engaged several stakeholders to assist with addressing the technological shortfalls in the organization (Participant 1). In addition to being a visionary, Participant 4 pointed out that it was essential for leaders to be technology-driven. Though there is a persistent challenge to promote technology adoption, technologically driven leaders are capable of encouraging persons who are hesitant to accept new technology (Participant 4). Arguably, the technology adoption process can be challenging, thus, it was important that leaders are able to exercise effective ethical behavior that demanded accountability. In that regard, Participant 4 shared that several ICT initiatives were implemented, however, some staff refused to use the technology, and as such, the leadership of the institution has been working to attain accountability from non-adopters. Despite the various leadership support approaches, it was evident that effective leadership was fundamental to managing resistance and driving technology adoption.

Leadership support is a core component to the technology adoption process. Leaders are uniquely positioned to create an adaptive organizational culture that promotes innovation and increases trust. As such, managers should engage in active ICT participation to encourage the acceptance and use of new technologies (Sacavém et al., 2025). Saghafian et al. (2021) asserted that choosing a suitable leadership approach was necessary to foster appropriate technological changes. Their study highlighted that the transformational leadership style was ideal for digital transformation (Saghafian et al., 2021). Iqbal et al. (2024) agreed that transformational leaders were significant to the technological change initiatives. They also noted that organizations benefited from leaders who supported technology-driven agendas (Iqbal et al., 2024). In that regard, Mola et al. (2023) advised that the top-down approach hindered innovation and retarded technology adoption. They argued that the hierarchical style was associated with tension and mistrust. Top-down leadership strained the relationship between staff and management. Thus, attempts to promote new technologies may fail because staff resist changes imposed by managers (Mola et al., 2023).

However, Černe et al. (2023) maintained that as work environments become more digital, the leader-follower approach may be more appropriate to provide structure and focus for teams in the virtual space. They insisted that a highly digitized organization complicates the traditional management framework and disrupts certain leadership styles. For example, transformational leadership was ineffective in advanced digital workspaces because the approach depended on in-person interactions to influence and motivate teams (Černe et al., 2023). Bozkus (2024) confirmed that a hierarchy culture provided structure and stability in dynamic environments. However, he informed that leaders must possess the capability to clearly communicate digital transformation efforts, reduce fear and encourage technological acceptance. Leaders should also be able to envision potential challenges and solutions that will aid the digital transformation process (Bozkus, 2024). Possessing strategic vision was an asset to leaders because it improved their capacity to forecast technology adoption issues and identify appropriate resources that will enhance the institution's technology readiness (Sacavém et al., 2025).

Tagscherer and Carbon (2023) suggested that successful digitalization started with visionary leaders. They noted that visionary leaders fostered collaborative environments and motivated employees to accept and use new technologies. Support from visionary leaders also cultivated innovation and reduced adoption challenges (Tagscherer & Carbon, 2023). Sacavém et al. (2025) agreed that leaders must be visionaries to provide meaningful support for successful technology adoption and assist with mitigating adoption challenges that may arise. They claimed that visionary leaders were catalysts for technological transformation and the best suited to navigate the nuances of digital changes. Additionally, they urged that technically equipped visionary leaders were more capable of transforming their institutions and seamlessly aligned digital strategies with organizational goals (Sacavém et al., 2025). Noteworthy, leaders should demonstrate a high level of ethical leadership that persuaded employees to take responsibility for their actions in the technology adoption process. In that regard, ethical leaders ensured that employees were accountable for their roles in the organization's digital transformation (Baba, 2024). Jayavelu et al. (2024) agreed that ethical leadership and accountability were vital for supporting innovative initiatives.

Therefore, leadership support must incorporate an ethical approach when engaging staff to accept and use new technologies (Jayavelu et al., 2024). Significantly, implementing innovative initiatives was complex and required leadership support that advocated for technological changes (Sacavém et al., 2025). According to Mokganya et al. (2024) the multifaceted nature of digital transformation involved the combination of several leadership approaches to achieve successful technology adoption. For example, promoting the adoption of new technologies needed leaders who embodied transformational and transactional leadership styles. They explained that technology adoption thrived when leaders can inspire their teams to explore new digital tools and also provide structured direction that ensured effective integration of technologies (Mokganya et al., 2024). Thus, the findings and literature confirmed that leadership support was essential, and each engagement approach contributed to the organization's successful adoption of new technologies.

Unified Theory of Acceptance and Use of Technology (UTAUT)

The findings generally aligned with the UTAUT conceptual framework initially proposed to guide this research. UTAUT provides the base theoretical foundation to explain the impact of facilitating conditions, social influence, behavioral intention, use intention, effort expectancy, and performance expectancy on technology adoption (Venkatesh et al., 2003). The basic principle of the model indicates that key factors and moderators were used to determine the acceptance and use of new technologies (Trenerry et al., 2021).

In this study facilitating conditions, social influence, performance expectancy, effort expectancy, behavioral intention, and use intention constructs from the UTAUT model were the projected predictors of technology adoption. However, the six constructs that emerged from participant responses and documentation were slightly different than expected. The findings introduced constructs of hedonic motivation (comfort) and trust as viable predictors in the context of Jamaican government institutions. Thus, the UTAUT model was extended to include the two concepts. Though Tamilmani, Rana, Wamba, and Dwivedi (2021) posited that the extended UTAUT framework which includes hedonic motivation was developed in a consumer context, various research has applied the model to explain technology adoption in different settings including e-government. Several researchers have proven that the model was useful in predicting technology adoption (Tamilmani, Rana, Wamba, & Dwivedi, 2021). Marikyan and Papagiannidis (2023) also confirmed that UTAUT2 model has been applied to e-government settings to understand technology acceptance in the sector. They concluded that all the constructs in the model were determinants for technology adoption in government institutions, particularly in developing countries (Marikyan & Papagiannidis, 2023).

In that regard, each participant presented a series of strategies that they used to promote technology adoption in their organizations. I categorized the strategies used by the IT managers using the six constructs from the findings. For example, I identified the provision of training, infrastructure, in-house IT experts, and Inter-organizational collaboration as facilitating conditions. The facilitating conditions construct dominated the list of strategies used by IT managers to promote technology adoption in Jamaican government institutions. Notably, institutions that provided sufficient facilitating conditions were likely to achieve increased usage of new technologies (Saputra et al., 2021). Table 3 represents the list of strategies presented by all participants and documentation.

Table 3

Strategies and Sub-Strategies Used by IT Managers

Extended UTAUT constructs	Strategies and Sub-strategies	Rationale
Facilitating Conditions	• Training and Support ○ Tailoring training based on group ○ Provide user support services ○ Conduct user awareness sessions	• Providing adequate training will encourage technology adoption • User support is important in the

	• Organizational preparation and technical readiness
	  ○ Provide appropriate ICT infrastructure and tools
	  ○ Careful assessment of ICT solutions
	    ▪ Conduct research
	    ▪ Ensure that the new solution is compatible with existing systems
	    ▪ Review requirements gathered from end-users when developing/ buying new systems
	  ○ Providing stable and reliable connectivity
	  ○ Optimize and improve ICT infrastructure
	  ○ Systems implemented to improve capabilities of business support portal
	  ○ Distribute ICT devices
		technology adoption process
		• Increased user awareness of new technologies improves the rate of adoption
		• Careful evaluation of ICT solutions is important to the technology adoption process
		• Providing appropriate ICT infrastructure and tools will encourage technology adoption
		• Inter-organizational collaboration improves an institution’s capacity to adopt new technologies
		• Organizations with internal technical expertise have a higher rate of technological adoption
		• Incremental technological changes impact technology adoption

	- Tailor approach to connect with mixed age groups - Develop systems that are flexible (modular) - Develop systems in phases (increments) - Foster inter-organizational collaboration - Recruit and upskill in-house IT technical experts - Develop comprehensive ICT policies	
Social Influence	- Change management - Identifying and selecting change agents - Peer learning - User involvement - User segmentation - Requirement gathering - Prototyping and iterative development - Stakeholder input/ feedback - Pilot testing - End-user feature approval - Leadership support	- The role of change agents increases the acceptance and use of new technologies - Peer learning is important in the technology adoption process - Involving employees in the technology implementation process influences acceptance and use - User segmentation is important in the technology adoption process because the rate of adoption differs among younger versus older people

		• Age influences the rate of technology adoption among users • Allowing users to test new technologies increase technology adoption • Increased human-machine interaction can influence technology adoption • Effective leadership is essential to managing resistance and driving technology adoption
Effort Expectancy	• Implement flexible and user-friendly systems • Invite vendors to demonstrate the features and benefits of new solution	• People are willing to accept technology that is easy to use • People are willing to accept and use technology when they understand how it works
Performance Expectancy	• Implement technology based on need • Design solutions aimed at improving work processes	• People readily accept technology that benefits their needs • People are willing to accept and use technology if it improves their work

Trust	• Build an environment of trust	• Building trust and rapport is essential to encourage positive behavioral intentions • Building trust among people increases the rate of technological adoption • Building trust with users can help overcome resistance to new technologies • Building trust is essential for encouraging users to share their thoughts and experiences with new technologies • Building trust can help change negative mindsets • Building trust is essential for fostering a positive attitude towards technology • Building trust can significantly enhance users' willingness to engage with new technologies

Hedonic Motivation (Comfort)	• Utilize appropriate approaches that enhance users' comfort level with technology	• Different age groups have varying levels of comfort with technology that can affect their behavioral intention. • Involving users in the development and testing of new systems can enhance their comfort level with technology. • Users who receive adequate training are more likely to feel comfortable with new technologies. • Tailoring training to meet the specific needs of different user groups can enhance their comfort in using new technologies

Notably, in addition to the moderating effects of experience proposed for this research, another moderator that emerged from the data was age. There was evidence to suggest that the moderators impacted the relationships between the constructs. For instance, age moderated the relationship between facilitating conditions and behavioral intention, social influence and behavioral intention, and hedonic motivation (comfort) and behavioral intention. The rationale was that more younger people were entering the workforce, and as such, it was less challenging to introduce new technologies. Participant 3 shared that “in Jamaica you have the younger ones that are coming into… the public service now. Previously, it used to be the older folk that would make up… a significant portion of the government workforce.” Noteworthy, younger people readily adapted and expected the introduction of new technological solutions in their organization to support their work (Participant 3).

This shift has prompted institutions to focus on user segmentation as a strategy when implementing new technologies. That is, age consideration has to be incorporated in systems designed for older people. In that regard, Participant 3 informed, “when you're developing solutions, it gives you the opportunity to, tailor it for this community… for the older people... They're not as technology savvy”. Therefore, system features for an older audience must be simple and intuitive, large screen and text, simple language with clear instructions (Participant 3). It was also important that the new system was user friendly (Participant 1).

Puspitasari et al. (2019) encountered similar findings in their research. They advised that the younger population were more familiar with technology which allowed them to readily accept and use new systems. In comparison, older people had difficulty learning system features, thus, they were hesitant in accepting new technologies (Puspitasari et al., 2019). Arguably, younger employees will be more open to adopting new systems, while older employees may approach new technologies with skepticism. Aisa et al. (2023) argued that as technology evolve some older employees struggled due to skill mismatch. As such, older employees needed targeted training to support their transition in the new labor market (Aisa et al., 2023). The effects of a user's age on technology adoption strategies were evident and significantly influenced behavioral intentions.

Accordingly, the experience moderator directly impacted use intention and the relationships between facilitating conditions and behavioral intention, hedonic motivation (comfort) and behavioral intention, and effort expectancy and behavioral intention. The findings revealed that behavioral intention can be adversely affected if employees had negative experiences with technology in the past. Poor experiences resulted in users being hesitant to accept and use new systems. For example, systems that are written in standardized IT language and require users to consult a manual are usually rarely adopted by staff (Participant 3). Notably, comfort levels can be severely affected if users have limited experience with technology. However, there was also evidence that people who received frequent exposure to ICT readily accepted and used new technologies. That is, hands-on experiences can help users become more comfortable and confident with the new systems. Thus, Participant 3 explained that allowing users to interact with the system prior to implementation, gives developers an opportunity to make informed decisions about user preferences and intentions to continuously use the solution (Participant 3).

Additionally, early exposure to ICT can positively affect the rate of technology adoption. Participant 1 suggested that people who were exposed to technology from a young age adapt quickly to new technologies implemented in institutions. Therefore, younger users tend to have a more positive attitude towards technology, as they are often more familiar with it from their education and personal experiences. Experience can also lead to greater acceptance and can enhance an individual's intention to use the new technology. That is, users' confidence increases overtime when they engage with technology. In that regard, the experience moderator must be examined from the negative and positive perspectives to better understand its impact on the relationships between the constructs. Leesakul et al. (2022) confirmed that some employees may feel uncomfortable with new technologies because they had insufficient experience with human-machine interactions. Müller et al. (2024) suggested that increased experiences with technology systems strengthened the relationship between effort expectancy and behavior intention. They explained that as users become more familiar with system features usage increased due to the positive experience (Müller et al., 2024). Thus, when users feel satisfied with their human-machine experiences they become more receptive of the new technology and were likely to continue using it (Joshi, 2025).

Facilitating Conditions

The effects of facilitating conditions on behavioral intention was significantly positive. Strategies associated with this construct allowed users to feel more confident in their ability to use technology, increasing their behavioral intention to engage with new systems. In that regard, it was essential to create an environment that enabled users and improve the likelihood of technology adoption. Thus, employing strategies such as training and user support was crucial for enhancing behavioral intentions. Participant 1 noted that during the COVID-19 pandemic, the implementation of several ICT initiatives incorporated training as an essential method to encourage acceptance and use of new technologies. Other factors such as the provision of appropriate ICT infrastructure and tools positively impacted the successful implementation of technology in organizations. Participant 4 explained that the IT team generally received full support from staff for ICT projects that involved the installation of equipment and systems that enhance the infrastructure (Participant 4).

Further, participants noted that careful assessment of technology systems was crucial. As such, Participant 1 reiterated the importance of assessing ICT solutions. They reported that during the pandemic an island-wide evaluation was conducted on the ICT infrastructure that supports government schools. The results of the assessment allowed the institution to forge partnerships with other organizations to improve the infrastructure. This inter-organizational collaboration helped to provide reliable service which encouraged increased usage (Participant 1). Facilitating conditions had a positive effect on behavioral intention. There was also evidence that the construct was a strong predictor of use intention under certain conditions (Or, 2023). Joshi (2025) confirmed that facilitating conditions were essential to the technology adoption process. He also argued that the various resources involved in facilitating conditions increased user satisfaction, thus positively influencing behavioral intention. In the context of this research, the impact of the strategies is a clear indication that facilitating conditions support the adoption and effective use of new technologies within an organization.

Social Influence

Social influence was a prominent factor among participants. The strategies in this category impacted the behavior, and actions of individuals prompting them to adopt or use a technology. For example, IT managers used peer learning, change champions, user involvement, and leadership support to manage resistance, build trust and empower users to accept and use new technologies. The results indicated that peer learning significantly affected behavioral intentions because the method boosted staff confidence and their willingness to adopt the technology systems. Participant 3 also suggested that peer support was effective for all age groups. They noted that "people tend to learn better from their peers… the older people, they learn very well from older people. Younger people, it's the same thing." It was also important to identify change champions from the groups who will help to advocate and encourage others to use new systems (Participant 3).

User involvement also enhanced an individual's behavioral intention to use the technology. The data showed that engaging users early in the development process made them more likely to accept and adopt new solutions (Participant 3). Thus, user involvement ensured that technology met their needs and expectations (Participant 1). Further, all participants agreed that leadership support played a crucial role in technology adoption. For instance, implementing ICT solutions often requires leadership support to be successful. A leader's active participation as advocates for technology demonstrated value, thus influencing the wider staff to accept and use new systems. Conversely, if leadership support was lacking or there was a poor relationship with leaders, adoption strategies can be rendered ineffective. Therefore, social influences must be carefully managed to ensure positive outcomes. Marikyan and Papagianni (2023) confirmed that the impact of social influence on behavioral intention can present varying results. They explained that context can affect the relationship between the constructs. For example, the effects of social influence on behavioral intention can be insignificant in settings where people are forced to adopt technology (Marikyan & Papagianni, 2023). Saputra et al. (2021) had similar findings, indicating that the result was due to lack of support for peers and leaders.

Though, Joshi (2025) results showed positive impact of social influence on behavioral intention. He asserted that social influence can be leveraged to increase acceptance and use of new technology tools. Nevertheless, he cautioned that the effects of social influence were contextual, and factors such as age, culture and work settings can affect results (Joshi, 2025). Accordingly, Rinjany (2020) observed that social influence had a strong and positive effect on behavioral intention. His findings suggested that a supportive environment with highly influential individuals accounted for the variance (Rinjany, 2020). In that regard, Bozkus (2024) explained that social influence can have a positive effect on behavioral intention when organizations encourage environments that are conducive for peer learning (Bozkus, 2024). Therefore, social dynamics, different user groups, cultural context, and leadership are all critical factors that must be considered to understand the acceptance and use of new technologies within organizations.

Performance Expectancy and Effort Expectancy

The findings indicated that relative emphasis was placed on performance expectancy and effort expectancy compared to the other UTAUT2 constructs in technology adoption strategies. According to Saputra et al. (2021) performance and effort expectancy were not strong determinants of behavioral intention. In their study, they alluded that several factors including skills and education levels were the reasons for the insignificant impact. Though Participant 3 and Participant 4 informed that new systems were generally accepted when users could see how a system improved their work processes or make tasks easier, the IT teams still encountered challenges. As such, Participant 3 advised that live demonstrations could be a benefit to users because it provided an opportunity to improve their understanding of the system. They noted that it was good practice to invite solution providers, vendors, and manufacturers to conduct demonstrations. The sessions present real proof of concept and allow staff to interact with the solutions. It is also important that sufficient time is allotted for users to practice and experiment (Participant 3). Participant 4 agreed that conducting more demonstrations allows users to identify the benefits and experience the functionality, features, and practical application of the solutions (Participant 4).

Accordingly, users who recognize the benefits of technology are more likely to use it. However, some users remain resistant despite efforts to heighten their awareness about the benefits of new systems. Participant 4 argued, though efforts are made to invite vendors to demonstrate solutions, staff sometimes object because they perceive external solution providers as a security risk to personal data. This is a major challenge for IT teams because resistance affects the adoption of new technology (Participant 4). Yuliantie (2024) also identified that performance expectancy had a positive effect on behavior intention, however, its impact was insignificant. He suggested that several factors including user experience accounted for the variance (Yuliantie, 2024). Nevertheless, the low impact of performance expectancy on behavioral intention in the context of this study was contrary to the majority of the findings in extant literature.

For instance, Hakim, Afifah, and Aryotejo (2023) found that performance expectancy directly influenced behavioral intention because users were more interested in the benefits and convenience of the system (Hakim, Afifah, & Aryotejo, 2023). Marikyan and Papagianni (2023) observed that performance and effort expectancy had strong and positive effects on behavioral intention. Al Sayegh et al. (2022) also noted that the effects of performance and effort expectancy on behavioral intention were significant. Additionally, Joshi (2025) identified similar trends in his study. He explained that the user's active engagement with technology accounted for the positive results (Joshi, 2025).

Accordingly, it is a general expectation that making technology easy to use would enhance a user's willingness to engage with the system. That is, the design of the technology should be as simple and intuitive as possible. Users, especially those who are older or less tech-savvy, benefit from interfaces that are simple and user-friendly. Therefore, when effort expectancy was improved its relationship with behavioral intention is generally positive. Thus, Participant 1 and Participant 3 agreed that systems should be user-centric and tailored to meet the needs of different demographics. Participant 3 also advised that clear language and familiar prompts should be available to boost effort expectancy. In that regard, intuitive designs tend to enhance effort expectancy and encourage employees to use new technologies. However, despite efforts to tailor solutions based on needs, some users continue to struggle with accepting new technologies. For example, Participant 3 highlighted that it was important to help staff recognize that technology is a tool that may require some effort to learn and become familiar. However, it was also vital that the human-machine interface be designed to enhance efforts and improve experiences, especially for the older audience (Participant 3). Therefore, I interpreted that due to factors such as users' age and experiences, effort expectancy did not have strong effects on behavioral intention.

The effect of effort expectancy on behavioral intention is in keeping with findings from other studies including Alkhwaldi et al. (2022), Congo and Choi (2022), Hakim and Madyatmadja (2023), and Nguyen and Süß (2023). Hakim, Afifah, and Aryotejo (2023) also reported that the impact of effort expectancy on behavioral intention was insignificant despite positive attitudes toward intuitive designs. They suggested that anxiety played a role in the overall outcome of the findings. Concerns about privacy and security were also contributing factors that resulted in insignificant findings. Nevertheless, performance expectancy and effort expectancy presented some insight into employees' acceptance and use of new technologies. Notably, as government institutions continue to welcome younger people with more technological experience in the workforce, performance and effort expectancy may become less significant in predicting technology adoption.

Trust and Hedonic Motivation (Comfort)

The results highlighted that building trust was critical to the technology adoption process. Building trust and rapport with employees can alleviate concerns and improve their willingness to engage with technology. Thus, Participant 3 emphasized that "you have to find some way of getting them to start trusting you… If you can win their trust, it makes it a lot easier." In that regard, before introducing new technologies it was essential to reassure users to shift their behavioral intention towards acceptance and use. Joshi (2025) confirmed that building trust positively affected acceptance and use of new technologies. He suggested that incorporating trust in the UTAUT model provides significant insight into the impact of this construct and the role it plays in understanding the adoption of new technologies (Joshi, 2025).

Building trust also played a significant role in reducing fear associated with new technologies. Participant 4 shared that despite the proficiency of the IT team in developing systems, staff were generally fearful of new technologies. Thus, I deduced that it was integral for the team to ease fears before setting up new systems. Additionally, organizations can mitigate resistance to new technologies by establishing trust on an individual level. According to Participant 3, before introducing technological solutions, it can be helpful to connect with staff on a individual level, resolve their issues, demonstrate that your intentions are genuine, and reassure them that the system is to boost their performance. Engaging with users on a personal level and addressing usability issues can increase trust and improve the rate of technology adoption. Müller et al. (2024) argued that resolving usability issues was key to building trust among employees. They explained that there was a link between usability and trust, noting that establishing trust at the initial stages of the system design was relevant to the technology adoption process (Müller et al., 2024)

Comfort was also an important factor to encourage technology adoption in organizations. Participant 4 suggested that when users were comfortable with new systems, they were more inclined to adopt the technology. The findings also indicated that younger users were more comfortable with using new systems due to early and constant exposure to technology. For example, Participant 3 pointed out that younger users, who are often more familiar with technology, tend to adapt more easily, because they are introduced to technology in school, which forms part of their curriculum, learning, and development (Participant 3). As such, they are usually more comfortable with new technologies in the workplace. In contrast, older users were generally less tech-savvy due to limited experience with technology and tend to require more reassurance and support to improve their comfort with new systems. Participant 1 supported this notion when their institution assisted schools during the COVID-19 pandemic. The pandemic accelerated the adoption of technology in education, with many schools transitioning to online learning platforms requiring teachers and students to adapt quickly to new technologies. However, due to some teachers' ease with traditional teaching methods and lack of familiarity with new technological solutions, they were reluctant to embrace these technologies (Participant 1). Thus, improving the skills of older users and providing support can enhance their comfort level and encourage technology adoption.

The data was consistent with findings from Kesharwani (2020), Jarrahi and Eshraghi (2019), and Dittes et al. (2019) who asserted that different age groups had varying comfort levels with technology based on their orientation and frequent interactions with new systems. The range of experiences gained from their exposure also affected how each age group accepted and used new technologies. As such, comfort impacted the rate of technology adoption. In this research, comfort functioned as an independent variable to predict technology adoption. Though comfort is generally related to effort expectancy, the concept can also be aligned to hedonic motivation as a determinant of intention to use technology (Cheng et al., 2020). Thus, addressing the factors of trust and comfort can significantly enhance the acceptance and successful implementation of new technologies. However, more exploration of the trust and hedonic motivation (comfort) constructs are needed to determine their strength as predictors of technology adoption in the Jamaican context.

Behavioral Intention and Use Intention

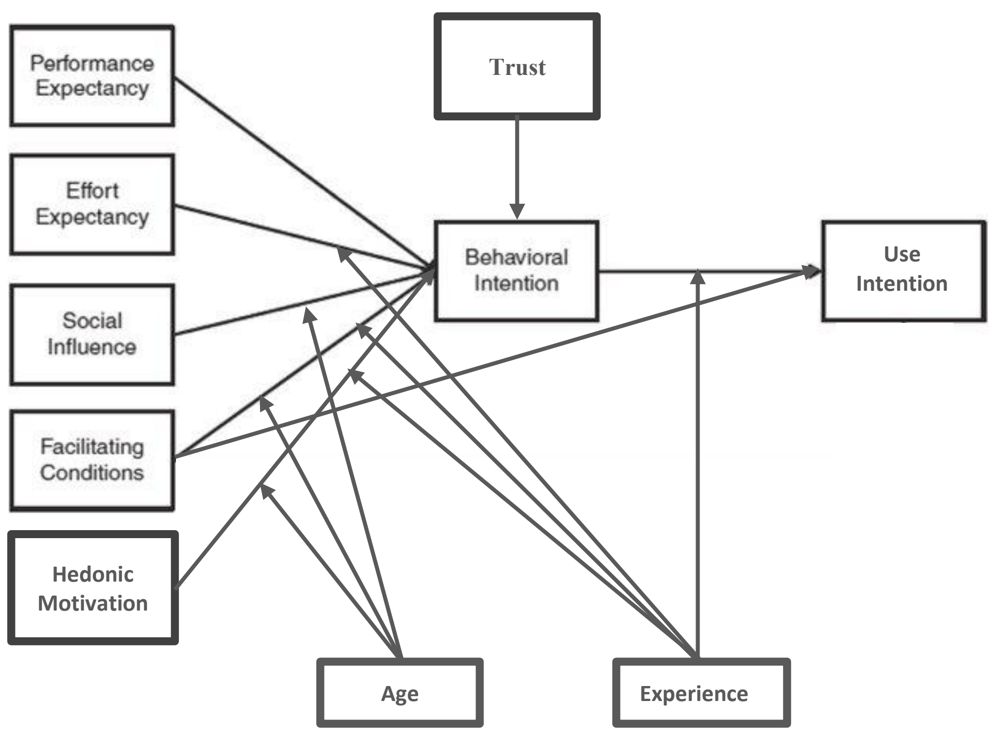
The technology adoption strategies used by IT managers did not directly associate with behavioral intention and use intention. Nevertheless, the strategies used influenced these constructs to attain technology adoption. Hence, it was determined that behavioral intention and use intention were outcomes of the other factors. This finding was consistent with other studies including Warsono et al. (2023), Hooda et al. (2022), Donmez-Turan (2020) and Ayaz and Yanartaş (2020). They claimed that factors such as facilitating conditions, effort expectancy, performance expectancy, and attitude influenced an individual's behavioral intention to accept new technologies. Accordingly, Azamela et al. (2022), Hooda et al. (2022), Ayaz and Yanartaş (2020), and Mensah, Zeng, and Lou (2020) suggested that the same factors along with social influence significantly impacted use intention. Therefore, it was essential that IT managers developed technology adoption strategies using frameworks such as UTAUT and other similar models.

The key technology adoption strategies outlined by IT managers were organizational preparation and technical readiness, training and support, inter-organizational collaboration, user involvement, in-house expertise, leadership support, building trust, and change management. Arguably, evidence from the study upheld the notion that the UTAUT2 framework was an effective model to explain technology adoption. Camilleri (2024) confirmed that constructs from the UTAUT2 model were substantial to predict technology adoption. Accordingly, Joshi (2025) supported the notion and added that the UTAUT2 extended model provided a holistic view of the relationships between the constructs. He further stated that adding trust and moderators such as age improved the model's exploratory power (Joshi, 2025). Notably, the constructs of trust and hedonic motivation (comfort) emerged as additional predictors in exploring the strategies used by IT managers to promote technology adoption in Jamaican government institutions.

Additionally, age and experience moderated the relationships between constructs, influencing technology acceptance. Thus, the constructs and mediators in the context of this study were sufficient predictors of technology acceptance and use. Further, social influence and facilitating conditions, such as training and infrastructure, significantly impacted behavioral intention. However, performance expectancy and effort expectancy also played roles, but their effects varied. Accordingly, behavioral and use intentions were outcomes of other factors, emphasizing the need for strategic frameworks in technology adoption. The various factors impacted the administration of strategies and affected several aspects of the technology adoption process. These insights highlighted the importance of the factors that affected the acceptance and use of new technologies within organizations. The findings also presented reminders that technology adoption was dynamic. It was also critical to note that results were contextual which can be affected by various conditions within or external to the environment. Figure 6 represents an extension of the UTAUT model based on the findings.

Figure 6

Extended UTAUT Model



Technology Adoption Challenges in Government Institutions

Participants identified several adoption challenges that affected the implementation of ICT initiatives. Users had a fear of the technology, particularly older employees with concerns about being replaced by systems and younger staff. According to Participant 3, older employees have a general fear of technology because they perceive these solutions as a threat to their jobs. Additionally, new technologies are being implemented to hire younger staff who will replace them. Therefore, measures should be in place to help them overcome those fears (Participant 3). Ertiö et al. (2024) advised that job insecurity was a significant issue associated with the implementation of automated systems. Losing jobs due to new technologies in the workplace is a stark reality for some workers based on the varying technical skills needed to operate these machines (Ertiö et al., 2024). Leesakul et al. (2022) explained that the fear of being replaced by technology was a real issue for employees. Staff suffered anxiety when institutions introduced new technologies because they lacked technical skills and experience. Though, systems were designed to reduce their workload, they develop feelings of being replaced (Leesakul et al., 2022).

Employees also expressed fear relating to privacy and security which prevented acceptance and use of technology. Participant 4 alluded to privacy and security fears in earlier section. They advised "that the new technology, the pushback that you might get… persons will tell you, you have set up something to come and watch them, or they won't log on to their banking account again because we are trying to steal their banking information." Jackson and Allen (2024) argued that privacy and security were essential to the technology adoption process. They urged that practical strategies should be employed to effectively address these concerns. Failure to mitigate privacy and security concerns can debilitate technology adoption efforts (Jackson & Allen, 2024). Leesakul et al. (2022)

also confirmed that privacy concerns about technology was high among employees. They provided evidence that staff were worried about the implementation of technologies by their employers and the possible misuse of their personal data. This underscored the need to have robust strategies in place that will allay these fears (Leesakul et al., 2022).

Skepticism about the benefits of technology was also an issue that reduced the effectiveness of technology adoption strategies. For example, skepticism can be a hinderance to technology adoption with direct impact on training. That is, training was sometimes ineffective when individuals were not willing to accept changes because they did not understand the value and potential benefits of the system. Participant 4 explained that because employees are sometimes skeptical about the new technology, they are hesitant to interact with the system. As such, implementing solutions and training staff to use them can be difficult (Participant 4). According to Valtonen and Holopainen (2025) skepticism is a form of resistance that is displayed when organizations introduce new technologies. They argued that all forms of resistance have a negative impact which disrupt digital transformation (Valtonen & Holopainen, 2025). Participant 1 also mentioned that lack of technical skills was a technology adoption challenge. They raised concerns about users not being technologically savvy, adding that individuals were reluctant to use technology because they did not possess the requisite skills to perform basic tasks (Participant 1). Leesakul et al. (2022) explained that the lack of required skills threatened technology adoption. Thus, upskilling staff should be employed to reduce resistance and gain their acceptance of new technologies (Leesakul et al., 2022). Adoption challenges impede the success of the strategies used by IT managers to promote technology adoption. Thus, identifying suitable strategies to mitigate the challenges was a priority for each participant.

Compounding the issues of technology adoption challenges is the introduction of artificial intelligence (AI). Participant 3 revealed that the addition of this component has increased the complexity of the technology adoption phenomenon. They expressed that AI has great potential in helping users accept and use technology; however, it can pose a threat to job performance. This could be a reality due to the reliance on this technology for decision making. The simple intuitive design associated with AI solutions may give people a false sense that they do not need to interact with the technology and learn how to use it, be productive, and get value from the system. As a result, the machine will learn from users and develop capabilities to interact with them, reducing the need for persons to improve their abilities. Overtime, the use of technology may decrease (Participant 3). My general interpretation is that while AI can be used to increase the rate of technology adoption organizations must be cautious about the dangers of the technology. That is, an over-reliance on AI can reduce the rate of technology adoption.

Khoza et al. (2024) highlighted the implications of introducing new technologies in the workspace. They stressed that the positive impact of technology acceptance and use can be outweighed by the negative effects. Relying heavily on technology to increase job performance can reduce an individual’s level of engagement with the system. The more an employee accepts technology it leads to technology overuse which eventually causes technostress. In that regard, technology acceptance has the potential to impede technology adoption (Khoza et al., 2024). Thus, the technology acceptance process must be carefully managed along with suitable strategies to mitigate the adverse effects of technology acceptance and use.

Applications to Professional Practice

A lack of effective technology adoption strategies can hamper carefully designed digital transformation initiatives. Aleisa (2024) indicated that the dynamic landscape of technology adoption, particularly e-government, should incorporate diverse methodologies to promote adoption. Thus, strategies such as trust-building, end-user awareness, user education programs, and user engagement are some of the crucial elements to drive digital transformation (Aleisa, 2024). Additionally, Xicang et al. (2024) argued that effective allocation of resources, devising strategies to mitigate risks, and administering targeted training are other methods that improve the success rate of digital transformation. Addressing concerns associated with ICT implementation is also a critical component for the digital transformation process (Xicang et al., 2024). Accordingly, the research findings suggested that several strategies should be developed to increase technology adoption.

In that regard, the eight key technology adoption strategies identified in this study: (1) organizational preparation and technical readiness, (2) training and support, (3) inter-organizational collaboration, (4) user involvement, (5) in-house expertise, (6) leadership support, (7) building trust, and (8) change management, are applicable to IT practitioners in government institutions and other entities that aim to enhance the acceptance and use of new technologies. Each strategy presents opportunities that strengthen an organization's capacity to increase technology adoption. Oyetade et al.

(2024) confirmed that organizational readiness and keen leadership approaches were consistent with technology adoption. Further, change management initiatives such as peer learning, and fostering an innovative culture were foundations of technological integration (Oyetade et al., 2024). Therefore, the strategies outlined are ideal for the complex nature of technology adoption. As such, they can be integrated into professional practice to promote technology adoption in Jamaican government institutions.

Implications for Social Change

The findings of this study may aid IT managers and policymakers in improving the slow rate of technology adoption in Jamaican government institutions. The results of this study could also assist leaders to better understand the multifaceted setting of digital transformation and the challenges that must be mitigated to achieve successful technology adoption in their institutions. The strategies that emerged from the data may be applicable to struggling institutions that intend to increase the acceptance and use of new technologies. According to Lazor et al. (2024) the integration of technological tools in government organizations improves internal operations and service delivery. Therefore, a digitally enabled institution that employs targeted strategies to optimize participation tends to influence transparency and increase accountability. As a result, citizens' interaction with public services increase, prompting greater social cohesion (Lazor et al., 2024). Notably, developing an appreciation for technology adoption frameworks such as UTAUT may strengthen an institution's capacity to develop effective strategies to promote technological integration at all levels in the organization. As such, Congo and Choi (2022) explained that understanding how the constructs of UTAUT model affect e-government adoption can enhance an organization's acceptance of new technologies and overall performance (Congo & Choi, 2022). In that regard, carefully mapping the key technology adoption strategies to the UTAUT framework may provide organizations with effective methods to achieve long-term acceptance and use of new technologies. This achievement could ultimately improve service delivery with positive outcomes in communities.

Recommendations for Action

This study started on the premise that some IT managers lack strategies to promote technology adoption in Jamaican government institutions. Thus, the recommendations for action are geared toward government ministries, departments, agencies, and other entities that continue to struggle with technology adoption. The recommendations outlined below were derived from my research and the academic literature. In that regard, the key technology adoption strategies that emerged from the data and grouped as internally driven, externally driven, and integration strategies may guide the successful outcomes of digital transformation efforts.

Internally driven strategies represent approaches that are developed within the organization to guide digital transformation and encourage technology adoption. These include the provision of adequate ICT infrastructure and tools to enhance the organization's technical readiness. A robust and reliable ICT infrastructure supports technology adoption. Providing training and support throughout the digital transformation process is also an effective strategy that helps users adapt to new technologies. Notably, organizations that foster a culture of trust to overcome resistance, alleviate fears associated with new technologies, and help users accept change, tend to be more successful in promoting technology adoption.

Other internally driven strategies include engaging users in the early stages of system development. User involvement encourages acceptance of the final product. Accordingly, identifying and empowering change champions to advocate for digital transformation is key to encourage new adopters. Change management facilitates positive attitude towards technology. Further, it is essential that organizations recruit and upskill internal technical teams to ensure that ICT solutions are carefully assessed before implementation. A highly competent team also facilitates seamless integration of new technologies. Developing terms of reference and ICT policies to guide the digital transformation process is also critical to technology adoption success.

Externally driven strategies are approaches that incorporate external influence which impacts the technological readiness of and adoption within the organization. In that regard, organizations are encouraged to foster environments that allow inter-organizational collaboration to thrive. Partnering with organizations that have similar digital transformation goals or specialized technology skills presents unique opportunities to identify viable solutions that increases technology acceptance and use. It is also important that entities use government regulations and ICT policies to guide how their organizations engage with other organizations to implement technological initiatives

Integration strategies are generally used to facilitate a cohesive implementation of new technologies. Thus, separating staff into groups can be beneficial for technology adoption by allowing tailored training and support based on needs. This may include user segmentation which presents an opportunity to tailor ICT solutions to suit preferences. This will also ensure that system designs are intuitive and simple for users. Using a phased implementation approach to introduce new technologies can also aid smother transitions and technology adoption. Therefore, it is also good practice to have proof of concept that can be used to design prototypes for testing before implementing new technologies. Lastly, invite vendors to demonstrate proprietary systems and facilitate hands-on experience. These integration opportunities boost user experience and encourage long-term use of technology.

The results will be shared with the entities that participated in the study. The strategies can also be shared with other institutions that are interested in promoting technology adoption in the workplace. Additionally, a presentation of the findings can be shared with colleagues in the IT industry via the Gov Tech Talk series hosted by the Government of Jamaica ICT Authority.

Recommendations for Further Study

The purpose of this qualitative multiple case study was to explore the strategies used by IT managers to effectively promote technology adoption in Jamaican government institutions. The findings of the study prompted an inquiry for additional research to be conducted. Several limitations were identified that warrant further exploration. Limitations include (1) the type of government institutions and sample size of the study, (2) the population for this study, and (3) data collection method.

Notably, the findings from this qualitative multiple case study cannot be generalized because the focus was specific to government institutions in Jamaica that achieved a relative success rate of technology adoption. The case institutions that participated in this study are uniquely positioned to drive technology adoption across the government sector. These entities, along with their numerous partnerships, have spearheaded several ICT initiatives that garnered successful adoption in the respective institutions. Though more work is needed to achieve full acceptance and use of technology among staff, the entities are able to realize relative success and meet the government of Jamaica’s digital transformation mandate. Additionally, the structure and size of the entities had a minimal effect on their technology maturity. The strategies used by IT managers to promote technology in the institutions were also similar. However, the perspective on leadership support differed based on approach and culture within the organization. Thus, I recommend that a comparative multiple-case study be conducted to include entities that experience difficulty achieving technology adoption. This approach may provide greater insights into the effectiveness of the strategies used by IT managers to promote technology adoption in Jamaican government institutions. Accordingly, the sample size that was selected using purposeful sampling presented risks that hampered the completion of the study. For instance, though the study intended to engage 12 IT managers from three institutions only eight participants were identified due to one entity’s inability to facilitate the study. The sample size was further reduced due to a low response rate. Nevertheless, the study managed to attain data saturation. However, I recommend involving more participants using other qualitative sampling methods.

The selected population for this research was IT managers and specialists with 10 years of experience in the IT industry. As a result, valuable interview data was discarded because one participant had less than 10 years of experience in the industry. I recommend that consideration be made to lower the experience criteria to increase the population and improve the response rate. Further, this study relied on two data collection methods: semistructured interviews and documentation. The interviews conducted via Zoom encountered several technical issues that caused some discomfort for participants. This medium was also adjusted to collect audio recordings only to minimize the risk of undue exposure of participants' identity. As such, despite the convenience of the virtual setting, direct observation was infeasible. Therefore, I recommend that future research conduct in-person interviews and incorporates other data collection methods such as focus groups, journaling, and field notes. The inclusion of other data collection methods may allow for more in-depth understanding of appropriate strategies that could be employed to improve the technology adoption process in Jamaica government institutions.

Reflections

As a library and information professional who has worked within government institutions for over 17 years, I have been exposed to a number of automation initiatives. A 2-year, 10-month stint as an information technology (IT) manager presented a unique opportunity to directly engage in the implementation of new technologies. The IT environment also provided a glimpse into the different stages of technological transformation and the nuances of the technology adoption process. These experiences have shaped my perspectives and expectations about the acceptance and use of new technologies. Notably, the varying levels of success or failure prompted my enquiry about the phenomenon. Thus, the study aimed to explore the strategies used by IT managers to effectively promote technology adoption in Jamaican government institutions.

During the IRB approval phase for the study, obtaining a Letter of Cooperation from organizations proved difficult and lengthy. After receiving IRB approval, I contacted three partnering government institutions in Jamaica. Two institutions agreed to accommodate the study. The institutions that agreed identified and provided contact information for potential participants. However, inviting persons to participate seemed daunting and challenging due to busy schedules or periods out of office. Nevertheless, participants who made time for the study provided expert knowledge on the topic. Their contributions provided a better understanding of the technology adoption process and the strategies that can be applied to increase the rate of acceptance of new technologies in Jamaican government institutions. To minimize personal biases, I tried not to impose my views during the interviews and followed the interview protocol. Member-checking was also conducted to confirm reliability and credibility after the interviews.

The data analysis phase of the research encountered challenges to identify suitable software. The proposed NVivo software was expensive, and as such, I selected ATLAS.ti as a more cost-effective option to analyze the data collected from the interviews. To ensure effective use of the ATLAS.ti software I participated in two webinars hosted by the company. The code book used to assist the analysis process was developed from the constructs of the UTAUT2 conceptual framework that was used to guide the research. The themes that emerged from the data were surprisingly consistent with the literature. Despite the challenges, the research process was rewarding. The doctoral journey helped me develop an appreciation for academicians and the profound impact of research on social change.

Summary and Study Conclusions

Six themes emerged from the data including (1) organizational preparedness and technological readiness, (2) training and support, (3) inter-organizational collaboration, (4) user involvement, (5) in-house IT technical expertise, and (6) leadership support. The strategies outlined under each theme presented useful options that could be employed by IT managers across the public sector to promote successful technology adoption in their organizations. The strategies were grouped by the UTAUT2 constructs to test the validity of the model. It was identified that the actual constructs were slightly different from the proposed predictors. Facilitating conditions and social influence were the strongest predictors of technology adoption. Trust and hedonic motivation (comfort) that emerged from the data seem to play essential roles in the acceptance and use of new technologies. Though the constructs of performance expectancy and effort expectancy were important, and had a positive impact on behavioral intention, they were not strong predictors of technology adoption. The anomaly could be due to the young people who make up most of the workforce. Noteworthy, behavioral intention and use intention were dependent variables in the technology adoption process. Two moderators (age and experience) also emerged from the data which provided a better understanding about the relationships between the constructs particularly the impact on behavioral intention. The moderators affected the strength of the relationships between the constructs. This study concluded that eight key strategies including building trust and change management were drivers of the technology adoption process in Jamaican government institutions. The findings also demonstrated that the UTAUT2 model was an effective framework to determine technology adoption in government institutions.

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Appendix A: Interview Protocol

Proposed Interview Protocol

Date and Time	
Location	
Participant ID	
Consent form, privacy documents signature	Thank you for consenting to participate in this pilot interview session
Introduction of the researcher	I am a Doctor of Information Technology candidate at Walden University. I want to thank you for taking time out of your schedule to participate in this pilot.
Identify the purpose of the research study	The purpose of this study is to explore the strategies used by IT managers to effectively promote technology adoption in Jamaican government institutions.
Relate why participation is needed	The data from this interview should help to provide answers to my research question and provide partial fulfilment of my course assignment.
Beneficence discussion	
Discuss privacy protections and ethical boundaries	To ensure your privacy is protected, I

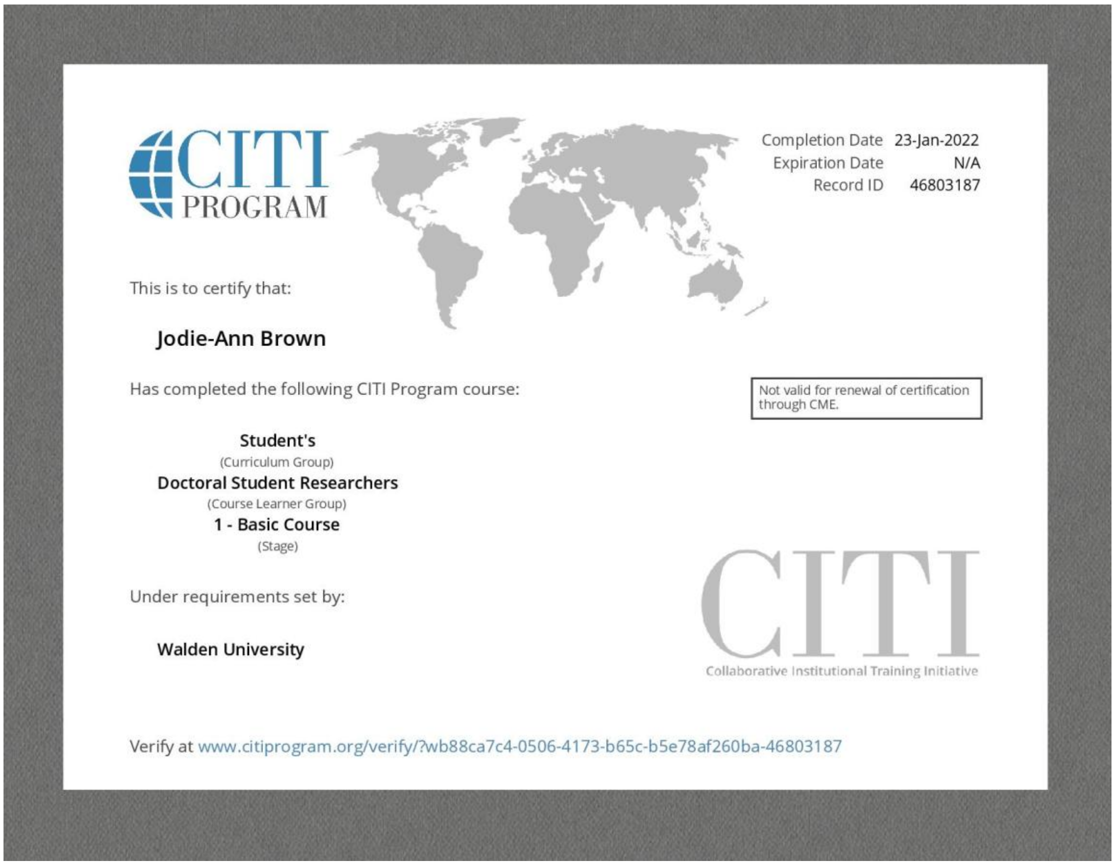
	would like to get your permission to record this interview and to take notes regarding our interactions and your response. In this process I will make an introduction only using your participant ID and ask you to confirm your permission. May I begin recording now?
Begin recording	**Here with me is participant A, today is [Date] and it is now [Time]. Can you confirm that I have explained the motivation and background for this study and that I have covered the reason for your participation and that I have your permission to record this session and take notes?**
Explain Confidentiality of the study and participants	**At any time during this interview, you can stop me to ask questions or terminate the session and/or your participation in this interview.** **Information gathered during this interview will be treated as**

	confidential. There will be no disclosure of any of this information to your employer or any other individuals. **I would like to request that you refrain from using any specific names of individuals or organizations in order to protect the privacy of others. In the event that such information is present, I will remove that information from the transcripts so that no one discussed can be identified in any way.**
Opening Questions	
1. What is your current job function and how long have you been working in that role?	To confirm that the interviewee has the expert knowledge to speak on the topic
2. What are your experiences with initiatives that align organizational transformation goals with technology integration efforts?	To verify that they have adequate experience with the phenomenon

3. How would you describe your experience implementing ICT projects within government institutions?	To identify the interviewees specific experience with the research problem
4. What is your experience with staff attitude toward adopting and using new technologies?	To understand how they treat staff attitudes when implementation of new technologies
Content Questions	
5. What strategies have you used to implement ICT projects and promote technology adoption among staff?	To find out about the IT manager's knowledge ability to develop effective strategies to get staff buy in of the new technology
6. How would you describe the effectiveness of the strategies used to implement ICT projects and promote technology adoption among staff?	To determine the appropriate use strategies when implementing new technologies to encourage adoption
7. What strategies should be developed to improve the implementation of ICT projects and promote technology adoption among staff?	To identify the strategies used to promote technology adoption among staff

Follow Up Questions	
1. How does your understanding of the organization's culture help you to develop strategies that promote technology adoption?	To gain additional information as needed about the IT manager's knowledge of about factors that can affect their ability to develop effective strategies
2. What challenges do you experience when implementing strategies to promote technology adoption among staff?	To gain additional information as needed about staff attitude and the strategies in place to reduce push back from staff
Closing Question	
8. Do you have any additional comments to add to this topic?	

Appendix B: CITI Program Certification



CITI PROGRAM

Completion Date 23-Jan-2022
Expiration Date N/A
Record ID 46803187

This is to certify that:

Jodie-Ann Brown

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Student's
(Curriculum Group)
Doctoral Student Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Walden University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wb88ca7c4-0506-4173-b65c-b5e78af260ba-46803187