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# Strategies Used by IT Project Managers to Integrate ICTs in the Eastern Caribbean

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College of Management and Technology

This is to certify that the doctoral study by

Carl Roberts

has been found to be complete and satisfactory in all respects,
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Walden University
2020

Abstract

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MS, Walden University, 2018

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Doctoral Study Submitted in Partial Fulfillment

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## Abstract

Current practices used to guide information and communication technology (ICT) projects in the Caribbean and developing countries lead to high project failure rates. Project managers must adopt new innovative approaches for transformation towards a 21st-century information society and sustainable digital economies. Grounded in the technology acceptance model (TAM), the purpose of this qualitative multiple-case study was to explore strategies information technology (IT) project managers use to implement IT frameworks designed to guide Caribbean ICT integration. Data were collected from face to face interviews and company documents and analyzed using coding, thematic analysis, and methodological triangulation. The participants were 12 IT project managers in 2 Eastern Caribbean countries. Thematic analysis was used to analyze, report patterns, and to identify emerging themes in the data. The themes that emerged were (1) management of organizational structure, (2) implementing a government wide area network to facilitate the innovations of an ICT-enabled services industry, business, and education, and (3) ICT integration budget, buy-in and challenges. A key recommendation is that IT project managers develop an IT implementation framework that aligns with an IT project management methodology by incorporating project management body of knowledge remedial measures to achieve defined project objectives. The implications for positive social change include the potential to share knowledge and dramatically lower barriers to starting a business, creating e-commerce, innovation, and online e-learning opportunities for empowering citizens and improving their socio-economic position.

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# Dedication

I dedicate this research to my deceased mother, Idona (Ivy) Roberts, who, during her lifetime as an educator, was central to fulfilling the dreams of thousands of students. Originally from the village of Concord in St Johns, Grenada, mom started her career in education after graduating as a senior high school student. Her enthusiasm for setting the best example and the guiding path for young boys and girls blossomed into a long tenure in her mid-life as headmistress of St. Paul's Model School. My deceased dad Benjamin Roberts is on a short list of World War II Veterans and known as an avid disciplinarian. Dad instilled the virtues of communication by encouraging the free flow of information among siblings and the family unit. My parents were married for forty-four years, and this dedication seeks to honor their services to God, country, and family; values herein are embedded in this research study.

I also dedicate this doctoral research achievement to my children Heston, Brad, Zachary, and my only daughter Gabriella, who at the time of writing this dedication is on a path of scholarly endeavor towards a doctorate in medicine at St. George's University (SGU) in pure Grenada. The support of everyone aided substantially towards my effort to succeed. Lastly, I dedicated this dissertation to my close friends and associates who have impacted or encouraged my successful attempt to become a doctor. This study may help to construct a rigorous path for positive social change that will ultimately benefit people and citizens of Grenada, St. Vincent and the Grenadines, and the Caribbean island-chain network and beyond. I hope that my example of perseverance and dedication will inspire contagious traits. Thank you all for your motivation during this challenging journey.

# Acknowledgments

I wish to express my sincere appreciation and gratitude to the team of scholars whose advice and mentorship helped me to become a Doctor of Information Technology. Committee chair and mentor Dr. Charlie Shao is responsible for shaping my academic intellectualism and doctoral writing skillset, and by example, has instilled a repertoire of exemplary leadership skills, qualities, respect, and inspiration. Dr. Shao's skilled tutelage is worthy of emulation in my future career as an IT professional or professor. My sincere thanks for your commitment to excellence. Special thanks to my second committee member Dr. Steven Case, and my URR, Dr. Gary Griffith, for your guidance and support. Your outstanding feedback and comments during the review process of my doctoral study ensured my conformity to Walden University's standards, the hallmark of professional excellence. I extend my gratitude for the knowledge you shared. I also extend sincere thanks to the DIT program director Dr. Gail Miles for your support and assurances of faculty support during my doctoral program.

Special thanks to all the friends I have made, classmates and colleagues at Walden University that I collaborated with in group sessions, projects, and regular classes; Ken Knapton, James Clapp, Vivian Lyon, Nicholas Murrietta, and Gregory Taylor. Your insights, ideas, concepts, and exceptional level of work provided me with a comparative example for self-assessment. I am eternally grateful for your camaraderie and competitive spirit. Finally, I extend my gratitude to the faculty and staff of Walden University, who assisted my work throughout the last five years. Thanks all.

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# Section 1: Foundation of the Study

Disruptions resulting from the adoption of information and communication technology (ICT) in the Caribbean and developing countries show no consistent patterns for delivering e-services in the process of transitioning to a digital economy. ICT can be pivotal to socio-technical and economic development with the potential to positively impact major aspects of social and economic activities including employment, education, healthcare, productivity, quality of life, and GDP growth (Palvia, Baqir, & Nemati, 2017). However, the debilitating impact of hurricanes and natural disasters in recent years warrant an improved resilient infrastructure and a strategic way forward. Research conducted by the Inter-American Development Bank (IDB) has warned that the long-term prosperity derived from emerging digital economies in Latin America and the Caribbean (LAC) must be ensured (IDB, 2018). Political leaders and citizens of Caribbean countries must take advantage of opportunities for growth that ICT present, but they should be aware of the risks associated with these disruptive technologies.

ICTs' investments come with expected increased production in organizations and economies and improved social conditions in developing countries (Yeo, & Grant, 2019) propelled by massive adoption and digitization of technologies, which in turn generate, process, transfer, and share information. IT professionals and project managers must be retrained and equipped with implementation strategies to overcome challenges to digital transformation. Cross-institutional links must inspire and cultivate effective collaboration among ICT, education, industrial, science, technology, and government economic sectors

to formulate and implement policy jointly (Markelov, Polyanskaya, Mineva, & Abbasov, 2020). Five major disruptive technologies noted by IDB's (2018) report include artificial intelligence (AI), cloud computing, blockchain, big data, and the internet of things (IoT).

## Background of the Problem

On July 4, 1973, a combination of integration efforts that started in 1965 finally reached its conclusion, evolving into a singular, more comprehensive plan that led to the signing of the Treaty of Chaguaramas, referred to today as the Caribbean Community (CARICOM; Nogueira, 1998). The first attempt at integration in 1958, made under British tutelage, established the West Indies Federation (WIF) that inspired the creation of institutions like the University of the West Indies and the Regional Shipping Service (Nogueira, 1998). However, after Trinidad and Tobago and Jamaica opted out of integration then gained their independence in 1962, the Federalist experimentation failed (Nogueira, 1998). On April 16, 2005, after a period of gestation, the Caribbean Court of Justice was inaugurated in Port of Spain, Trinidad, and Tobago (Caserta & Madsen, 2016), signifying a critical milestone in the CARICOM integration process.

The global financial crisis of 2008 negatively affected world economies marking a watershed moment in the postwar economic history of the world (Aizenman, Jinjarak, Estrada, & Tian, 2018). Repercussions felt in the Caribbean prompted the mobilization of governments who sought to answer questions like, "why 13 small economies, primarily small islands with limited resources and weak trade and communication linkages among themselves, seek to integrate their economies" (Nogueira, 1998, p. 163). Finding these

answers would involve exploring the Economic Commission for Latin America and the Caribbean (ECLAC)'s influence of economic development by import substitution type of industrialization and regional economic integration, which provided larger regional markets (Nogueira, 1998). Caribbean scholars influenced the industrialization and diversification route to development. However, the innovative solutions of ICT later evolved as the vehicle for implementing a technologically driven resilience program introduced by CARICOM's 2015-2019 strategic plan, in direct response to the development agenda for the region (Caribbean telecommunication union; CTU, 2017).

## Problem Statement

Current practices used to guide the implementation of ICT projects in the Caribbean and developing countries lead to high rates of project failure; and do not meet their desired goals and expectations (Palaco, Park, Kim, & Rho, 2018; Uys & Pather, 2019). Research of e-governments' success and failure rates indicated that 35% of IT project development efforts in developing countries are classified as total failures, 50% as partial failures, and 15% successes (Zhu & Kindarto, 2016). The general IT problem is the failure to understand the practices used to guide ICT implementation projects and how they are applied. The specific IT problem is that some IT project managers lack strategies to implement IT deployment frameworks designed to guide Caribbean ICT integration.

## Purpose Statement

The purpose of this qualitative multicase study was to explore the strategies used by IT project managers to implement IT frameworks designed to guide Caribbean ICT integration. The targeted population for this research comprised of IT project managers and professionals who delivered IT services and support within the business sector and government institutions of two countries in the Eastern Caribbean basin: Grenada and St. Vincent and the Grenadines. Data collected for this case study were derived from face to face interviews, organization documents, and peer-reviewed journals of research experts. This case study may support positive social change by devising effective strategies that are necessary for the delivery mechanisms of e-government services. These services include e-commerce, e-health, and e-education components consigned to the region through de-facto ICT initiatives. As a result of the study, technology researchers may acquire a better grasp of the developmental needs of e-government that enhance citizens' access to online government services, transparency, and accountability. Evolutionary transformations in teaching and learning and improved growth in industries are also a few important broad-ranging benefits to the Caribbean populace.

## Nature of the Study

A qualitative research methodology for this study helped me to explore IT project managers' use of strategic development policies and practices during the deployment and guidance of ICT projects in the targeted islands in the Caribbean and developing countries. Data collection in qualitative research uses observations and interviews (Yates

& Leggett, 2016) and has the potential to enable higher degrees of transparency, national transformation, and efficiency by acquiring a deeper understanding of key service innovations (Rubalcaba, Aboal, & Garda, 2016). A qualitative approach was the best option for this study because it helped explore how the implementation of IT decisions, plans, and processes for creating policies in the private and public sectors of Caribbean nations proceeded. Increased adoption of standardized practices in ICT implementation frameworks would enhance efficiencies in IT project management and lead to greater success rates in developing countries. A quantitative methodology was not adequate in yielding the descriptive analysis desired. Thus, this type of study would not have helped generate theories focused on empirical data. Researchers generally use the approach of a quantitative methodology to collect data in numerical form (McCusker & Gunaydin, 2015), which would have been an unfavorable choice for this study. A mixed-method approach uses quantitative components for hypothesis testing (Vogl, 2018). I used a single research methodology with the specific focus of analyzing the research question, and as such, a mixed-method approach was not beneficial. Neither a mixed method nor a quantitative approach would have satisfied the requirements suitable for conducting this study.

A multiple case study design was right for this research because of the exploratory prospects presented to dissect ICT's decisions, plans, and policies of national, regional, and international businesses as well as Caribbean governments. The multiple case study allows for deeper insights into the circumstance that encompass an experience instead of

the experience itself (Sharma & Aniket, 2014). The use of exploratory research captures characteristics of real-life events by the researcher that embraces the related events (Yap & Webber, 2015). A phenomenological design reveals the participant's unique lived experiences to the researcher when seeking to gain insights into the phenomenon (Alwi, Setiawan, & Asrizal, 2018). Also, the phenomenological design gives researchers the opportunity to gain an understanding of the opinions and perspectives regarding the studied phenomenon. However, a phenomenological design is inappropriate because the possibility of self-serving attribution bias to the researcher becomes an issue, and failure of other factors may be ascribed to some individuals while declaring activities they accomplish as being successful (Shtudiner, Klein, & Kantor, 2017). A researcher's life is completely immersed in the participant's cultural situation when using an ethnographic design. Furthermore, the theory of an ethnographic design focuses on describing or evaluating a participants' culture (Standlee, 2017). Ethnographic researchers investigate the beliefs, behaviors, and experiences of groups of people (Morgan-Trimmer & Wood, 2016; Reyes, 2020). A narrative design was not used in this study due to my intentions not to indulge in story-telling or generating theory (Denison, 2016; Von Contzen & Alders, 2015). Using a multiple case study design rather than a phenomenological, ethnographic, or narrative design was based on my intent to obtain a greater capacity to analyze nuances of the specific IT problem.

## Research Question

What strategies do IT project managers use to implement IT deployment frameworks designed to guide Caribbean ICT integration?

## Interview Questions

1. Describe your current role and how long have you been in similar roles?
2. Have you worked in any other role supporting ICT or its integration efforts?
3. What strategies have you used to implement IT deployment frameworks designed to guide ICT integration?
4. What were the key obstacles to implementing strategies to IT deployment frameworks?
5. What steps have you taken to overcome these obstacles to implementing strategies to IT deployment frameworks? Please elaborate?
6. Describe what strategies or policies would simplify implementation tasks while improving performance and effectiveness?
7. How would you define the barriers to implementing strategies that impede ICT adoption and IT project success?
8. How would you describe successes and setbacks of the ICT integration agenda?
9. What strategies do you believe are useful in implementing successful ICT solutions? Please explain.
10. What strategies/policies for integrating ICT can effectively advance positive attitudes toward IT implementation outcomes? Please explain.

11. If you had a do-over, explain the changes in approach, design, and strategic implementation you would incorporate?
12. What other information would you like to add regarding IT implementation strategies that project managers could utilize to improve the effectiveness of ICT integration and project implementation? Please provide details.

## Conceptual Framework

The conceptual framework I used for this study was the technology acceptance model (TAM) used by researchers to understand usage behaviour in end-user computing within the IS field in general. The development of TAM by Davis (1989) included variables such as perceived ease of use (PEOU) and perceived usefulness (PU) that predicted a user's acceptance of technology in the business world. The discovery of relationships between PEOU, PU, usage behaviour, features of the technology, and attitude towards technology's use and adoption was carried out with the aid of TAM (Wunnava, 2015; Yeh, 2015) and validated its importance. Following its creation, TAM was expanded upon by Bagozzi, Davis, and Warshaw (1992) to become more efficient in identifying its acceptance by users. Thus, IT practitioners can identify adoption issues that users may have with new technology and develop new strategies for a positive adoption rate (Bagozzi et al., 1992). A significant extension of Ajzen and Fishbein (1975) theory of reasoned action unifies TAM (Park, Hwang, Ko, & Kim, 2017; Rahayu & Day, 2015; Susanto, Mira, & Irmasari, 2017). The TAM extensions: TAM 2, TAM 3, the unified theory of acceptance and use of technology (UTAUT) as well as TAM, was

discussed by Lai (2017) as a novel framework and one of the most reliable, widely used research models for the acceptance of information technology.

The use of TAM as a conceptual model for guiding the practices of implementing ICT projects, applied to this research because the model provided insight into a project manager's level of confidence. TAM has built-in mechanisms such as user's intentions, which drive confidence, attitude, and trust in a system. TAM was used in this study to determine how PU, PEOU, usage behavior, and attitude towards policy and practices controlled critical decisions developed to help guide IT implementation framework strategies. A determination of every aspect of the current IT implementation practices such as standards, policies and procedures allowed the use of those features for researching PU and PEOU. These perceptions will impact the user's attitude as it pertains to the best methods to use the system, following the adoption of revised implementation practices.

## Definition of Terms

*E-government.* Computer-related services used over the internet and provided by the government, which has a significant influence on the actual use of e-government internet sites. (Al Mansoori, Sarabdeen, & Tchantchane, 2018).

*Framework.* A basic conceptual structure that helps people to better understand very complex ideas and processes by providing a simplified version of the phenomenon, concept, relationship, systems, and structure. A framework highlights the aspects of the

real-world enabling people to focus on the essential characteristics of that which is being modelled (Niederhauser & Lindstorm, 2017).

*Information and communications technology (ICT).* Different types of activities involving personal computers, smartwatch applications, social media, and other electronic technology that make information available to users/customers and firms through the internet (Zotto, Colombero, Pigni, & Haggège, 2018). It enables access to a wide range of tools that allow direct and near real-time interaction (Zotto et al., 2018).

*M-learning*. Also known as mobile learning. The capability to access learning content and learning support systems through mobile devices such as smartphones, tablets, or laptops (Rahamat, 2019). The ability for continuous access whenever and wherever to the learning process (Rahamat, 2019).

*Perceived ease of use.* Perceived ease of use refers to a person believing that utilizing a certain technology would take minimal effort to accomplish a set task (Davis, 1989).

*Perceived usefulnes*s. Perceived usefulness may represent the level of confidence a person feels in their use of technology to enhance his or her job performance (Davis, 1989).

*Project.* The means for delivering and implementing beneficial strategic change in organizations and societies (project management institute; PMI, 2017).

*Project manager*. A person who is appointed to lead the project team and is responsible for achieving the project objectives and deliverables (PMI, 2017).

*Project success.* The success of a given project should be seen relative to the level of difficulty of the project (Mikkelsen, 2018). The complexity of a project is a relevant measure of the difficulty of a given project; therefore, project success directly relates to the project's complexity (Mikkelsen, 2018). A multidimensional construct where project stakeholders can select various project success criteria they believe is critical to judging success (Joslin & Muller, 2016a).

*Technology Integration.* The use of technology, which caters to the development of processes that allow better decisions about how to be more effective when using technology's resources and provides insights that are conducive to the development of strategies to promote effective and efficient technology reforms (Niederhauser & Lindstorm, 2017).

## Assumptions, Limitations, and Delimitations

### Assumptions

Assumptions were critically important to the theory since they explain a theory's predictive accuracy, explanatory scope, simplicity, logical consistency, and the ability to generate new predictions and explanations (Foss & Hallberg, 2017). Typically, theoretical discussions involve the explanation and predictive consequences of an assumption, as well as the inquiry of which explanatory aim should the assumption be evaluated against (Foss & Hallberg, 2017). I assumed that the results of this research study could have been generalized and applied, and as such, could have presented

valuable insights into what strategic processes may be modified to ascertain a more successful outcome in project integration and implementation.

Additionally, assumptions directly involved participants of the study. I assumed that all scheduled participants who took part in an interview provided honest answers by volunteering information on projects proportionately, based on the number of successful projects versus the number of unsuccessful projects. I also assumed that each participant had acquired the experience and knowledge about strategies used by IT project managers of Caribbean businesses and government entities, pertaining to the implementation of IT deployment frameworks designed to guide the integration of ICT, ultimately leading to improved project success. Lastly, I assumed that the semistructured interview technique used captured all the major aspects of the interviewees' thoughts, views, experiences, and perceptions relative to strategies in their repertoire used during the lifecycle of project implementation.

**Limitations**

Limitations are essential parts of the research that may be considered more influential to the interpretation of the results (Singh, S., 2015b). The belief that a small number of participants may offer responses to questions posed in interviews, which show a preference for what the researcher might want to hear, is a limitation identified by Yin (2018). The validity of findings in the study was dependent on honest responses to open-ended questions that pertained to IT project strategies' contribution to improving the rates of success of IT projects. Potential weaknesses identified in the study were considered

limitations. Due to the limited geographical location and sample size in this study, the results may not reflect the opinions of other organizations and geographical locations. According to Kharuddin, Foong, and Senik (2015), the generalizability of a study is limited when researchers use small sample sizes and may pose a potential limitation of this study.

**Delimitations**

Delimitations involve the imposition of well-defined boundaries in the study by the researcher (Namey & Trotter, 2015). Researchers may identify the boundaries or scope of a research study with accurate descriptions of those delimitations. A minimum requirement of 2-5 years of experience in project management and contribution to the development of business organizations or government defined the scope of my study. Delimitations considered for this study were (a) prominent business organizations in two countries in the Eastern Caribbean: Grenada and St. Vincent and the Grenadines. (b) consideration of strategies used in IT/ICT project implementation frameworks. (c) excluding business executives and IT leaders who did not meet the required project supervision experience, and (d) consideration of participants who have completed a minimum of two IT/ICT projects on time and within budget. The population location was restricted to two countries in the Eastern Caribbean, implying that the results of this study may not be transferable to future research of IT project managers' implementation of strategies in countries outside of the geographical region.

## Significance of the Study

The findings which resulted from this qualitative research will help to address development framework strategies used by IT project managers, IT professionals, and business managers to integrate ICTs in the Caribbean. Thus, allowing a systemic social and technological analysis of problems related to policies, standards, and practices that are inherent in the approach to implementation techniques but elusive to project success.

### Contribution to Information Technology Practice

This study adds to the body of literature and qualitative research analyses that provide a roadmap for how developing countries in the Caribbean should leverage ICTs as a geo-transitioning axis to an innovative digital economy. The creation of an ICT knowledge hub (Gilbert, Samuel, & Mavellas, 2018), in line with sustainable socio-economic transformations, can help to expedite the process. Exploring implementation framework strategies for ICT focused on a holistic approach to improving project success factors for international business competitiveness adaptability. These technological advancements may also provide knowledge applicable to business managers, security/IT professionals, and researchers (Levius, Safa, & Weeks, 2018).

### Implications for Social Change

As developed and developing countries of the world today recognize the rising importance of digitization processes, private corporations, state organizations, and the public ponder the social impact on global competitiveness, economic development, and the welfare of the population (Revinova, & Chavarry, 2020).

This study might further influence positive social change in the Caribbean and developing countries, and directly improve the lives of ordinary people by creating key drivers of ICT to propel e-government through the delivery of government services and online education. The adoption of ICT services may create massive developments in IT industries and assist with the development of individuals' knowledge, computer skills, and use of the internet in their daily lives. The expansion of high-speed internet services to rural areas may significantly resolve these issues. Market executives and researchers may gain a deeper appreciation and understanding of online commerce by making use of opportunities presented to them by new business channels like e-commerce (Fayad & Paper, 2015). Using e-government services such as e-learning may potentially empower most citizens (Kassen, 2020), thereby spurring job creation in companies due to insights into information technology markets in developing countries and the region. Customers' privacy and security concerns about their data online and in the cloud may become less of an issue as knowledge about their protections are enhanced amid increasing cybersecurity threats and gender-based violence (GBV; Thakur, 2018), a growing concern to several Caribbean governments. The findings of this study may provide an acceptable roadmap of solutions for IT project managers and business executives in the Caribbean diaspora. The availability of training programs would assist in accurately evaluating the technical status of employees to determine follow-up steps to upgrade their skills, knowledge, and IT strategies. The program may also benefit IT professionals as well as the downstream technical workforce.

## A Review of the Professional and Academic Literature

The identification of ideas and knowledge of how IT implementation models impact the integration of ICT would present critical information applicable to highly qualified IT personnel needed to run sophisticated ICT and cloud computing systems in complex environments. The strengths and benefits of processes engrained in the selected conceptual framework used in this qualitative research study will inform readers of the literature review. Thus, presenting specific details that may enhance their understanding of the complete research process. According to Naber (2015), the literature review might unveil important insights that could add meaning and potential resolutions to envisioned concepts of the research study.

The Walden University Library was the primary resource for collecting the required evidence in this literature review. Searches in EBSCO Delivery Service (EDS) provided authoritative summary articles for many popular topics, peer-reviewed journals, ProQuest Central, Thoreau Multi-database, SAGE Full-Text Collection, ScienceDirect, SpringerLink, Google Scholar, printed and online books. Hinde and Spackman (2015) argued that the successful evaluation of the quantity and quality of the literature, as exhibited by a researcher, necessitates a search methodology. Resources specific to the literature review that emerged from available U.S. Government websites were also valuable, and Ulrich Periodicals Dictionary was used to verify peer-reviewed articles. A thematic strategy for this literature review involved an in-depth exploration of various governmental reports, scholarly works, seminal literature, and related books. I used

keyword database search techniques comprised of a combination of words and phrases such as *TAM, technology acceptance model, ICT implementation, ICT adoption, IT implementation, implementation strategies, implementation or compliance, strategies, security, cloud computing, project management, project success, IT Impact on business, Integration, IT integration, ICT integration, and adoption or methods or techniques.*

The search strategy contained the following components: a determination of relevance to the topic, assessment of the defined criteria and quality, keywords, and extraction of data in a timely fashion (Hjeltnes, Binder, Moltu, & Dundas, 2017). A thorough review of the literature incorporated references from different sources and was reviewed in a balanced and impartial manner to provide a measure of high quality in the process. The totality of sources and references were tabulated and presented in the form of a table represented below:

Table 1

*Summary of Research Articles Consulted in the Literature Review*

| Sources from a review of the professional and academic literature | Number |
|---|---|
| Total number of references in the literature review: | 155 |
| Total number of peer-reviewed references in literature within five years: | 144 |
| Total number of peer-reviewed references in the literature review: | 147 |
| % Peer-review references in the literature review: | 95 |
| % peer-review references in literature review within five years: | 93 |

**Application to the Applied IT Problem**

Understanding the plan of action, blueprint, or policy used by IT project managers is a prerequisite for determining its PU and PEOU in the practice of designing effective strategies used to implement IT deployment frameworks within the Caribbean ICT space; thus, the inspiration for this literature review.

The information contained in this literature review provided a valuable scholarly foundation that assisted me in the analysis of data related to what strategies IT project managers use to implement IT deployment frameworks designed to guide Caribbean ICT integration. Generally, persuasive arguments demonstrated by researchers throughout the academic literature is the custom (Liao, Deschamps, Loures, & Ramos, 2017). However, framing the study's research question involves researchers seeking a better understanding of a similar topic by exploring previous work of academic scholars. Although the use of a conceptual framework by qualitative researchers provide clarity on key issues (Hammad & Hallinger, 2017), a conceptual framework provides the gateway for a qualitative study to describe a phenomenon in great details by the use of themes developed from patterns (Onwuegbuzie & Weinbaum, 2017). Two components of major importance to my review include the integration of the ICT phenomenon and the TAM. I subdivided TAM into the following 6 primary categories: (a) theoretical foundations of the TAM, (b) historical evolution of TAM. (c) analysis of the TAM, application of TAM in various fields. (d) Supporting the research theories of TAM. (e) TAM limitations, and (f) future direction of TAM in the context of ICT.

## Theoretical Foundations of TAM

This professional academic literature review focused on examining the strategies used by IT project managers to implement frameworks designed to guide the integration of ICTs in the Caribbean. My purpose was to review and analyze the existing researches performed by researchers and accredited scholars on the impediments to high performing IT environments experienced by project managers. One of the main research challenges of information technology involves thoroughly understanding why people reject or adopt a technology. Several researchers have used various theoretical models in their attempt to explain this phenomenon. However, since the inception of TAM by Davis (1986), this model has gone through periods of enhancements by scholars in the hope of being better able to explain the phenomenon investigated.

## Historical Evolution of TAM

The theory of reasoned action (TRA) was used by Ajzen and Fishbein (1975) to indicate that a person's belief, in addition to their prior intentions, could directly impact their behavior. The authors also made an inference that a persons' attitude toward an actual behavior based on someone else's opinion or feelings rather than facts or evidence (subjective norm) may determine the behavioral intention of a person. Although the TRA model has been used extensively by researchers across many studies, some limitations exist in the endeavor to measure technology's acceptance by a person based on PU and PEOU variables. The development of TAM by Davis (1989) took advantage of the behavioral intentional framework created by Ajzen and Fishbein in 1975 and used as a

platform due to its practicality and usefulness in determining a person's intentions of adopting the technology. Although the TAM was developed based on the principles of TRA, how perceived ease of use and perceived usefulness were measured differs from the methodology taken by the Ajzen and Fishbein approach; TAM has since advanced in several ways. Exclusion of the subjective norm variable in TAM is one of the major differences between both models; due to no information obtained vis-à-vis assumptions of how other individuals are affected by the actions of participants.

Ajzen and Fishbein (1975) suggested two ways of forming normative opinions. Firstly, advice volunteered to a person concerning what their actions should be by another individual. Secondly, arriving at a conclusion about their expectations based on an event they observed, or information received. Participants who took part in a test of normal acceptance used technology for the first time; still, the capability of receiving information from any other persons to ascertain a normative inference was absent. Because forming a normative inference was not possible (i.e., knowledge of how to respond contributed by someone else) when performing the test on the users, perceived social normative would be nonexistent. Thus, speculation would surround the result by the removal of those influences. When TAM is used to test PU and PEOU variables, researchers must specifically address these issues.

The TAM was used by Davis (1989) in research that explored the underpinnings to factors of resistance to technology acceptance. The design of TAM was based on the TRA to advance an explanation for the user's acceptance of information systems (Davis,

1986). The rationale for the behaviors of individuals throughout various user populations and computing technologies, given their acceptance to computer systems and technology, were determinants sought by researchers who used TAM to find an explanation (Rondan-Cataluna, Arenas-Gaitan, & Ramirez-Correa, 2015). The origins of TAM gave needed assurances to researchers exploring the uses of TRA relative to the intention of an individual to use a product. Behavior and attitude were two variables used by TRA, while the intention to use based on PEOU and PU were variables explored by TAM. TAM is used by researchers to investigate whether an individual would reject or accept the use of technology and to predict the intentions of a person to use such technology.

Lai (2017) articulated that the TAM, the theory of planned behavior (TPB), and the TRA are three of the most prominent conceptual, theoretical models used in the area of IT research and adoption of current technology. The extensive adoption of TAM has prognosticated the determinants of technology and adoption usage in a wide variety of settings. The proposition of a link between utilization behavior and the acceptance of technology primarily supports an explanation of IT usage (Lai, 2017). Researchers' use of TAM may predict users' attitudes towards acceptance of new technological innovations. Research conducted by Alalwan, Dwivedi, Rana, and Williams (2016) and Kaushik and Rahman (2015) indicated the existence of an important relationship between user's perceptions toward new technology and their definitive use of technology that can be demonstrated by scholars. TAM has been used by researchers in many studies to determine what factors influence a user's acceptance of the technology. In 1989 Davis

developed the TAM, which assumed that when a type of technology is perceived by users to be easy to use and useful, there is a greater possibility that they will use it (Ajibade, 2018). Based on that assumption, the probability that employees will accept and use new technology increases once they recognize that by using the system, their tasks will inevitably become easier to perform.

The theory of reasoned action is the basis or foundation of TAM. Its theorists posited that an individual's behavior has motivational effects on social behavior acutely designed to predict the use of information systems (Ajibade, 2018). Although the popularity of TAM gives assurances to its credibility in measuring the degree of user technology acceptance, the simple nature of TAM, accompanied by its ease of understanding the framework, provides reasonable justification for its popularity, credibility, and unanimous acceptance. This model descended from Ajzen and Fishbein's (1975) TRA model. However, because of a few psychometric and theoretical uncertainties in the TRA model, the user's subjective norm was eliminated (Taherdoost, 2018). TAM enlightened the user's motivation by explaining the following factors: PU, PEOU, and attitude towards use. The inclusion of behavioral intention (BI) in TAM and two other previously mentioned variables, PEOU and PU, have a considerable impact on the user's attitude (Taherdoost, 2018). External variables like system characteristics, user participation in design, user training, and the implementation process are sometimes considered part of the TAM model (Taherdoost, 2018).

**Analysis of TAM**

During the last 10 years, TAM has received substantial empirical support and has been considered one of the most trustworthy and widely cited models in the area of technology acceptance. TAM is one of the most popular theoretical models used by researchers in studies to assess the effects that system characteristics have on user acceptance. According to Davis (1989), TAM helps researchers to provide an in-depth explanation of users' adoption of information technology, which validates a mutual relationship between perceived ease of use, perceived usefulness, and predicted use. The study conducted by Bogart and Wichadee (2015) alluded to the positive effect of attitude and perceived usefulness toward the intention to use the LINE application for creating TAM. This revelation aligns with Davis (1989) omittance of the construct of subjective normality that was instrumental in the TPB and TRA exploits. Davis (1989) suggested that the decision to use technology for better job performance by individuals is one each user must face. Another pivotal and important change made by Davis focused on general beliefs relative to the theory of planned behavior and the theory of reasoned action. Two additional key items that included the PEOU and PU addressed beliefs influencing the attitude and intention to use technology (Davis, 1989). The use of TAM by researchers to help identify reasons for adopting technology is the basis for its popularity and frequent use (Davis, 1989).

The ability of researchers to use the TAM to present an explanation of the reasons for the acceptance of technology is one of its greatest assets (Davis, 1989; Sharma, Al-

Badi, Govindaluri, & Al-Kharusi, 2016). The primary application of TAM is to assist researchers in exploring the intent of users to adopt and use technology, taking into consideration how a person may feel about the ability for their job performance to be enhanced by that technology, or the technology's PU (Davis, 1989). PEOU relates to a person believing that upon the use of a certain technology, it will contribute to their satisfactory accomplishment of a set of tasks with minimal effort (Davis, 1989). Individuals evaluate behavioral outcomes relative to PU based on the desirability of PU. Sharma et al. (2016) acknowledged the use of PU by researchers as an indicator for validating the acceptance of technology. If an individual's job performance remains the same without making any improvements by the technology offered, the desirability of the product will be low — the PEOU influences an individual's understanding of potential enhancements to their job performance brought by certain systems.

Some researchers believe that the effort necessary for performing a task is directly impacted by a system that has a high level of PEOU and should also have an equally high level of positive performance rating. The researcher's use of TAM allows the additional benefit of applying PEOU and PU to reach a determination of its relevance to the technology's adoption. The theory developed by Davis (1986) secured validation of users' acceptance of certain types of technology. Two different objectives were noted by Davis (1986) for developing TAM. The first objective involved obtaining an intricate understanding of the exact process of new technology acceptance by users, and the other involved the revelation that TAM should allow researchers the capability to advance a

theoretical basis for the testing of user acceptance. Considering the result of these two objectives, and before implementing new systems, software designers would have the ability to obtain significant information to understand the uses of these systems and their functionality better. User acceptance testing is required for the usage of TAM to create a functional environment for users of the new technology in that environment, thereby allowing for user acceptance testing of the development of a new system (Davis, 1986). These two objectives identified in the TAM's creation allowed Davis to further explore nuances in his research related to users' acceptance of the technology.

Users of technology judge a system's acceptability on how easy they can use the system instead of the functionality of that system. As far as examining and understanding all the reasons for the acceptance of technology by people who use it, many promising conceptual or theoretical models have been explored, proposed, or adopted. One such conceptual framework that works well with this study is the information system theory discussed in this analysis and referred to as TAM. When a new technology is presented to users, decisions about how and when system usage occurs consider PU and PEOU to be influencing factors. The specific influences of PU and PEOU are unreported in the fundamental constructs of TAM due to the variances of factors among users that impact new technology adoption. Davis (1989) suggested that PU may be influenced directly by PEOU, and high PEOU leads to high PU, implying that PEOU impacts PU. Lah, Lewis, and Šumak (2020) noted that an important factor that helps to assess an information system's quality is the ease of use or perceived usability.

Two criteria used in measuring the implementation of technology and its success include PEOU and PU (Davis, 1986). Joo, Joung, Lim, and Lee (2015) used the same two criteria to measure and determine factors influencing the usage of Facebook. PEOU and PU were used by Joo et al. (2015) to determine its effect on usage frequency by many individuals using the Facebook application. The use of PU and PEOU variables allowed Joo et al. (2015) the ability to create research questions that collected data indicating the ramifications of participant's usage of Facebook. Pertinent data analyzed by researchers using TAM validated the adoption of Facebook application. TAM has also been used by researchers in various studies to establish factors that influence users' acceptance of the technology. Davis (1989) emphasized that a leading indicator of the influence on users' acceptance of technology is the importance of job performance to individuals seeking to use technology based on how well it can help them do their job. This factor indicates how much their performance is enhanced or its PU. Another factor is that regardless of how useful an individual perceives technology to be, the benefits of its use may be difficult to grasp and referred to as PEOU. PEOU and PU are two critically important variables used in the application of TAM to ascertain a more comprehensive understanding of the usage of certain technologies.

A major consideration for selecting TAM rather than previous theories such as the TPB, TRA, and the diffusion innovation theory (DOI) is specifically due to its influential extensions of previous theories. The application of previous theories to the sole ideology of successful project implementation strategies may first need to circumvent technology

acceptance barriers that may include external and internal forces. The TAM theory benefits from contributions of derivatives like the TPB and TRA theories. The selection of the TAM theory for its use as the conceptual framework for this research study rather than TPB, TRA, and DOI is the reckoning that the best theory for exploring the implementation strategies of project managers is the TAM. Deployment of TAM by researchers helps identify factors driving the successful integration of ICT (Franco & Garcia, 2017) and their impact on organizational performance.

**Application of TAM in Various Fields**

This section provides the application of a few important constructs of TAM revealed by researchers. As previously indicated, the primary constructs within TAM are PEOU, PU, and the attitude toward using (ATU). TAM was used by Okundaye (2016) to explain the influences that external variables have on the use of technology, beliefs, and attitude. The primary goal was to explore how culture directly influences PU and PEOU of ICT (Okundaye, 2016) and, in so doing, predict the behavior towards ICT's use where one of the factors that would determine its usage in technology is PU. Okundaye used semistructured interview-style questions to divulge information from participants as part of the data collection process and to gain insight into the adoption of ICT. Hence, allowing common themes in the data collected to be assigned unique codes. The information gathered from interviews helped to determine reasons to adopt the technology and to understand further why ICT was adopted. The interview questions

addressed perceptions of the technology that each participant had acquired based on their knowledge and perspective.

An organization may seek to implement an information system to assist in the carrying out of business functions, operations, and activities. Still, information systems become indispensable when required as an asset in running an organization (Harryanto, Muchran, & Ahmar, 2019). The use of TAM by researchers helped to understand the acceptance of new technology systems (Fauzy, Shah, Saedudin, & Kasim, 2018; Lazim, Shah, Saedudin, & Kasim, 2018). Researchers in this particular study constructed the TAM model by integrating variables that relate to experience due to their assumption that specific past experiences are a determinant of behavior and have the potential to help realize intention. Researchers charged external variables like experience, volunteerism, gender, and complexity in using the internet to develop TAM. Research findings revealed significant differences between non-experienced and experienced system users.

The use of TAM by researchers has delivered some major enhancements to the development and implementation of ICT realized with the paradigm of cloud computing. Cloud computing integrates and complements a robust architecture to deliver enterprise applications, services, and performance of very complex, large-scale computing (Hashem et al., 2015). The cloud is considered an extension of ICT, and the effective integration of ICT innovation is reliant on the implementation of strategies in the context of technology acceptance to successfully secure business operations and the environment in which it functions to propel productivity and growth. The debate of civic engagement may explain

citizens' attitudes and how they effectively choose to participate in community activities to better their conditions and help shape the community's future for others. Despite the different schools of thought, social innovation acknowledges the transformative measures that satisfy social needs otherwise unmet. A more progressive pendulum — the social innovation theory, determines the transformative attributes that are better characterized by systemic change, as noted by Edwards-Schachter and Wallace (2017). Edwards-Schachter and Wallace explained the presence of a more 'applied' domain in policy studies and the use of social services to address societal needs.

Both TAM and the TRA have undergone extensive scrutiny in technology acceptance studies and adopted to study factors that influence users' intentions to use technology (Tatnal, 2019). Ali Tarhini (Sultan Qaboos University, Oman), and Charles Buabeng-Andoh and Winfred Yaokumah (Pentecost University College, Ghana) compared these technologies in their research study; (Investigating students' intentions to use ICT: A comparison of theoretical models). An observation recorded that though Western nations have tested these frameworks, very little effort went towards their application elsewhere (Buabeng-Andoh, Yaokumah, & Tarhini, 2019). Based on the effort to globalize technology and education, there is an urgency to identify whether TAM and TRA are applicable in other cultures. Buabeng-Andoh et al. (2019) made some comparisons in their study between TAM, TRA, and integrated frameworks, which predicted or provided a rationale for students' intentions to use the technology. The data

analysis process engaged a structural equation model that collected data from 487 university students.

Findings among the three frameworks indicated no differences in the predictive strength of behavioral intention and, as such, the determination of apparent similarities in the predictive strength of all three models. The contributions made by the study added an important perspective to the ongoing discourse. Thus, the behavioral intentions of undergraduate students garnered a more in-depth understanding based on the application of the models, in the context of education within developing countries (Buabeng-Andoh et al., 2019).

**Supporting the Research Theories of TAM**

The study of ICT innovation and organizational change encapsulates the core theoretical position — whether implicit or explicit — a postulated relationship exists between social institutions and technology (Avgerou, 2002). Assuming a relationship of causality between societal structures, 'structurational' theories, and technology, a deep-seated or fundamental distinction may be made between deterministic theories. Also assuming, there is some form of interplay between human action and technology in an institutional setting that defies cause and effect relationships between social processes, structures, and material properties (Avgerou, 2002). The importance of user confidence and acceptance for the successful implementation and development of new technologies needs to be emphasized (Taherdoost, 2019). Two such important conceptual frameworks include the TRA and the TPB:

**Theory of Reasoned Action (TRA).** Powerful attitude theories like the TRA developed by Ajzen and Fishbein (1975) and its successor, the TPB, provided us with the capability to make predictions about behaviors and the ability to explain those behaviors. The inherent success in predicting and explaining the system's behavior became relevant due to the foundational premise that greater accuracy in predictions favors attitudes towards behaviors than attitudes towards objects (Hwang, Al-Arabiat, & Shin, 2016). The information technology discipline has the capacity and ability to make the necessary tools and knowledge available to practitioners that will guide implementation processes by directing their efforts in areas that attract end-user interests. Although the TAM dominates current theories for predicting and explaining the behavior of usage, TAM eventually emerged from the TRA. Hwang et al. (2016) noted that the intention to perform a specific behavior is an antecedent to the behavior itself. There are two established constructs to behavioral intention: the first being subjective norm, and the other being attitude toward that behavior. Capturing the negativity and positivity exhibited by an individual when performing the behavior explains the attitude construct. The subjective norm can attract the social influence aspect; the perception that other relevant individuals think the behavior should or should not occur. Ultimately, the emergence of TAM rejected both the subjective norm and the attitude construct.

A limitation of the TRA is that the behavior of interest must be volitional to establish its usefulness. However, the decisions of most technology organizations today involve senior management. As it relates to the use of newly adopted systems, employees

must comply with organizations' directives with few available options, primarily if such use of the system is the only means of completing their daily work assignments (Hwang et al., 2016). Employees' use of the system is not a given as their attitudes and behaviors may determine the success or failure of implementing a project.

**Theory of Planned Behavior (TPB).** The TPB evolved from TRA in 1980, which researchers used to predict the intention of individuals to engage in behavior at a particular place and time. During its proposition, the TPB considered conditions where an individual's lack of complete control over their behavior allowed for the addition of the factor of perceived behavioral control (PBC) (Shahin, 2017). The introduction of TPB resolved shortcomings in TRA based on criticisms of the theory. By adding the PBC construct, people's perception of the ease or difficulty of performing the behavior of interest may be accounted for in almost any behavior by researchers. Similar to how TRA treats attitude and subjective norm, TPB advances the idea that the main determinants of PBC are control beliefs (Hwang et al., 2016). According to Ajzen and Fishbein (1975), the goal of control beliefs is to represent how existing factors capable of facilitating or hindering their behavioral performance are perceived. Furthermore, the selection of PBC provides an antecedent of both behavioral performance and behavioral intentions. The suggestion that high PBC leads to an enhanced intention of an individual to perform a behavior, thus, increasing their performance and effort, is the basis for PBC's influence on intentions. The TPB originated within the discipline of social psychology. Many of its

hypothesized relationships and utility for adding PBC that increases the prediction of behavioral performance and intentions have received consistent support.

Generally, investigating the use of IT with the help of models that are cognitive and consequential is a common practice—for example, the TPB, the TRA, and technology adoption models such as the TAM. TRA and TPB are two popular models that provide the conceptual basis for TAM (Mahardika, Thomas, & Japutra, 2019). A common characteristic of these three well-regarded models is their use of behavioral intentions (BI) as the main predictor of an individual's behavior. BI is used by researchers in many different settings to adopt new technology and predict behavior. Bagozzi et al. (1992) noted that researchers' use of TAM presumed that when an individual forms BI judgements about rejecting or accepting new technology, there is no anticipation of any impediments between actual behavior and BI. For example, time constraints, unconscious habits, environmental contingencies, or ability limitations by that person (Mahardika et al., 2019). This scenario seems to apply more frequently to new technology adoptions at low risk of causing problems, circumstances whereby people's behavior is estimated to contain a high degree of control.

The TPB is the accepted general version and more encompassing than the TRA. TPB was proven to be extremely useful when utilized by researchers to study the acceptance of new technology by users. The use of Ajzen and Fishbein (1975) highly referenced TPB assures that the processes of fully explaining various behaviors in different facets of social sciences occur (Garay, Font, & Corrons, 2018). TPB explains

the result of BI as represented by three variables: (1) the attitude of a person toward behavior, (2) their subjective norm, and (3) their perceived behavioral control. The attitude of a person toward a behavior denotes a person's unfavorable or favorable predisposition to specific behavior and combines their beliefs as it relates to the behavior and assessment of that belief. Another explanation may present an individual's attitude that supports the results produced by the behavior. Subjective norm refers to how a person feels relative to others' opinions (friends, family, colleagues at work, etc.), the effect it has on their behavior, and how important it is to that person. Lastly, PBC refers to the added variable of TRA explained earlier, that is mainly responsible for increased predictive ability in situations whereby the behavior of a person exhibits limited control (Garay et al., 2018). The adding of variables is acknowledged to have more exploratory value in various ways and different contexts, but universal validity remains the strength of TPB. Hence, another approach that adapts TPB involves researching belief structures underpinning attitude, social norms, and PBC positions of TPB. Decomposed theory of planned behavior (DTPB) is an example of such a theory that studies behavior toward innovation.

TAM has been used by researchers to disentangle acceptability issues in different sectors that involve IT systems (reading, banking, education, and social networking). The use of TPB by researchers focus on areas that promote healthy behaviors, driving safety-related issues, and pro-environmental engagement (Motak, Neuville, Chambers, Marmoiton, & Moneger, 2017). Various studies have indicated the importance of

adjusting the acceptability model to be in line with the specific behavior or relevant technology. A large body of evidence has shown that by including constructs not initially considered, the amount of variance explained by TPB and TAM indicates a noticeable increase (Motak et al., 2017). Research exhibited the necessity for investigating social-psychological factors of behavior and the use of IT, by which comprehensive scrutiny of the psychological processes that indicate the BI and choice outcomes are evident (Maity, Bagchi, Shah, & Misra, 2019). Therefore, explaining altruistic and self-interest appeals through the identification of motivations to use IT systems is important. Current research literature informs of a collaborative effort by a social-psychological model and an expectancy-value model that allows for the explanation of altruistic and self-interest motivations to use IT.

Cost reduction, increased profitability, and marketing improvements are some of the benchmarks of personnel efficiency facilitated by the development of new business platforms that utilize an appropriate framework to predict user behavior and usefulness. Hence, finding the path to future successful development hinges on the recognition and understanding that individual needs and acceptance are the beginning stages.

**TAM Limitations**

A few challenges and limitations to TAM exist even though it is highly praised and has achieved overwhelming support and acceptance. Teo and Jarupunphol (2015) explained that two such dominant limitations include the lack of accountability for antecedent variables that have the potential to affect the initial constructs. Second, a

wholesome explanation of human behavior could not be expected of any model because various factors may be involved in motivating the inaction or action of a given individual. Consequentially, the TAM has been extended by several studies to address those inherent limitations or to accommodate certain cultural needs. The Dhammic framework defined by Teo and Jarupunphol (2015) is a good example that hypothesized the addition of the construct of attachment. This Buddhist adaption inevitably would address criticisms of TAM's simplistic nature when enforcing the acceptance of technology, and in the process strengthening TAM's reliability.

The general definition of acceptance is a positive decision and attitude towards the use of technology. User acceptance has been described and analyzed by models and theories developed by several researchers. However, questions about user acceptance tend to consume researchers' efforts to indicate the appropriate technologies for an organization. Practitioners and academicians are eager to discover factors that reject or accept new information technologies. Still, the ability to focus on those factors may provide opportunities to enhance methods for designing, evaluating, and be more predictive of user's response to the application of new technology. Taherdoost (2019) noted that the emphasis should be on influential factors of user acceptance to raise the level of user adoption and technology usage. The absence of people's involvement in accepting and using the newly designed and developed technology and applications make them obsolete and a failure.

The TAM is a modified version developed by Fred D. Davis to address the previous shortcoming of the technology alignment model (TAM) and to assist researchers in applying the revised TAM model in the context of research (Ajibade, 2018). Criticisms of the original version of the technology alignment model (TAM) implied that it was unsuitable or inapplicable to companies, firms, and various organizations like libraries that contained regulation and rules. Evidence was provided of TAM's inadequacies when the original model was applied to technology adoption and use by small and medium-sized businesses during a Ph.D. research in information science.

Other studies criticized the original TAM as not modelled or designed to evaluate e-learning systems or learning in electronic platforms properly. Laugasson, Quaicoe, Jeladze, and Jesmin (2016) suggested that TAM was irrelevant in determining the use of open-source software used primarily in schools of developing countries. Laugasson et al. (2016) argued that because open source is free, there is no incentive for users. Thus, the perception of usefulness and ease of use is not a factor due to the easy replacement of the technology by another free, open-source technology. Although studies have devoted their attention to investigating TAM's use by researchers in examining the perception of usefulness by technology users, it is a subject of extensive debate. Nevertheless, the argument is advanced that the use of TAM by researchers was unable to entirely explain the rationale for the use and acceptance of technology in business organizations. Even with that revelation, a majority of the literature has attempted to or used the TAM model on a large number of topics, including mobile learning (m-learning) adoption, learning

resources in higher education (Chintalapati & Daruri, 2017), and the adoption of cloud computing (Gangwar, Date, & Ramaswamy, 2015). Mobility and mobile learning, referred to as m-learning, is a perfect facilitator for ICT and cloud computing that could help change how education, business, and government currently operate.

Several studies have expressed TAM inadequacies in helping researchers to address the nexus between the adoption and use of the technology and the technology itself. The weaknesses of TAM to assist researchers in clarifying the behavior of users soon developed as part of the research findings (Hai & Alam Kazmi, 2015; Lim, Osman, Salahuddin, Romle, & Abdullah, 2016). Further details revealed that researchers' use of TAM did not sufficiently predict ICT's acceptance, and as such, another model provided an accurate prediction of the acceptance of technology (Hojjati & Khodakarami, 2016). The inference was made based on evidence from the literature that the original TAM model may have presented comprehensive precursors to mobile use, or social conditions that may have potentially influenced facilitating behavior (Napitupulu, 2017; Torres, & Gerhart, 2019). Although the popularity of TAM has increased because of many research studies conducted on this specific conceptual model, the use of new technology and its potential adoption by users could not be fully explained, particularly within the context of e-government.

The notion that by using TAM, a researcher can explain individual behavior is one of the criticisms of the model. Reports surfaced that indicated the technology alignment model was not being robust enough to satisfy an explanation of the behavior of

users regarding buying, accepting, or rejecting the use of technology (Hai & Alam Kazmi, 2015). Moreover, the conclusion made by a research study that although past studies did not view PU as a major predictor in the model, this was not consistently correct, specifically in the use of technology for entertainment and the use of online gaming. The compelling reasons given for customer's use of entertainment technology are for 'killing time' and relaxing. Therefore, the user's PU was unaffected.

**Future Direction of TAM in the Context of ICT**

Social media is an emerging powerful communication platform with untapped potential. Recently, an increase in academia's discussion of social media's significance for individuals and society has sparked an interest in social-media related research in various scientific disciplines including politics, public administration, education, communication sciences and journalism, economics, law, business administration, and technology (Wirtz & Gottel, 2016). Hence, the significance of social media on the broader economy and its growing impact on the increasingly digitized business world is not surprising. Social media are considered the primary tools for creating knowledge and critical exchange of information between entities and people within the technological development of this era (Scuotto, Del Giudice, & Omeihe, 2017). The key driver of innovation performance that allows connection and interaction outside and within the firm to collaborate easily with larger and diverse groups at lower costs is the social media paradigm, augmented by the inclusion of heterogeneous participants in sizable numbers (Ferraris, Santoro, & Dezi, 2017).

The argument may be advanced that many influencing factors that motivate the use and adoption of social media (crowdsourcing) by employees and management team (internal stakeholders) and retailers, customers, suppliers, and associations (external stakeholders), are responsible for driving innovation activity. Moreover, the development of an innovative process, derivation of effective and innovative outcomes rely heavily upon tangible and intangible resources and their synergies within the firm. In this regard, crowdsourcing and social media may be the enabler and management of innovation with the unique ability to assist various stages of innovation (Nascimento & da Silveira, 2017). Research on the relationship between organizational change and social media remains destined because of the capabilities of social media to facilitate activities in practice. The tools identified in the social media phenomenon has the potential to improve innovation's absorptive capacity by allowing organizations to scan their environment (Ooms, Bell, & Kok, 2015). Thus, helping to influence brand awareness and market development in its role as an enabler of co-innovation activities (Wang, Hsiao, Yang, & Hajli, 2016). As an enabler, the social media paradigm commands representation in innovation management literature that pressures scholars to recognize the role social media plays in managing the flow of knowledge across internal and external stakeholders. (Callaghan, 2016; Hitchen, Nylund, Ferràs, & Mussons, 2017; & Scuotto et al., 2017).

The rapid development of ICT has altered access, storage, and dissemination of information in this era (Alvertis, Biliri, Lampathaki, & Askounis, 2017; Weerasinghe & Hindagolla, 2018). Thus, innovative technology solutions are somewhat inevitable if an

organization will achieve a competitive advantage during this century. Social media is an emerging new technology that appeals to millions of users on various social networking platforms. According to Zhang, Li, Y. N., Wu, and Li, D. J. (2017), consumers maintain a constant presence on Facebook, Twitter, Flickr, and LinkedIn sharing knowledge, videos, pictures, updating their status, and being actively involved in communal activities and posting comments. Social media are a group of Internet-based applications that expands on the technological and ideological foundations of Web 2.0, which allows users to create and exchange content readily. Six types of social media available to users include:

(1) Social network sites (e.g., Twitter, Facebook, and LinkedIn)

(2) Content communities (e.g., YouTube)

(3) Collaborative projects (e.g., Wikipedia)

(4) Blogs (e.g., LiveJournal and Open Diary)

(5) Virtual social worlds (Second Life); and

(6) Virtual game worlds (e.g., World of Warcraft)

Based on how social media has entirely transformed the way organizations relate and interact with their external and internal publics, the general perception is that social media has changed the communication process between stakeholders and their public relations practitioners (El-Kasim, & Idid, 2016). The viral diffusion of social media has accentuated public relations practices globally. Because of the explosive growth of social networking sites (SNS) in the USA during the last decade, the adoptions of Facebook by 79% of online Americans resulted, while new adoptions of platforms such as LinkedIn,

Twitter, Pinterest, and Instagram account for 30% adoption (Greenwood, Perrin, & Duggan, 2016). Khan and Krishnan (2017) recent acknowledgement regarding the extension of e-government to social government or government 2.0 with the rise of social media and Web 2.0 technologies may indicate collaborative opportunities for individuals to share their experiences and learn together. E-participation is an ICT venture allowing citizens the capability of getting involved in policy decision making.

Several models and theories behind the rejection or acceptance of IT innovation have resulted from extensive research work; the TAM is one that has undergone many extensions, replications, and refinement (Wamba, Bhattacharva, Trinchera, & Ngai, 2016). A survey of 92 current Belgian business-to-business (B2B) organizations' perceptions of and attitudes regarding social media corresponds to U.S., U.K., and Dutch research findings that point to 85% of B2B company's use of social media to influence targeted groups (Wamba et al., 2016). Another revelation indicated the implementation of social media in 40.8% of IT organizations and 26.7% of industrial B2B organizations. The assumption is that IT organizations' reliance on TAM provides greater inclination to adopt social media due to their greater appreciation for evaluating the usefulness of social media vs. industrial enterprises' evaluation of social media (Veldeman, Praet, & Mechant, 2017). Further analysis of risks, social media knowledge, strategies, and benefits explained observed similarities and differences in both sectors. However, business-to-consumer (B2C) firms are making rapid adjustments to the changing climate that could create advantages and benefits to using social media platforms like MySpace, YouTube,

Twitter, Wikipedia, Facebook, and Instagram. B2C organizations are finding ways to use social media as a sales tool to gain a solid foothold in communications and marketing for the profitable use of social media applications (Veldeman et al., 2017).

Currently, there is a lack of comprehensive literature reviews about TAM as it relates to social media, which is surprising based on the high level of acceptance by users (Wirtz, & Gottel, 2016). Researchers identified thirty-five studies during a review of the variables used regarding their treatment as dependent or independent and relationships in different social media thematic contexts. Findings revealed similarities and differences concerning the original TAM, TAM 2, and TAM 3. Interestingly, PEOU, PU, and subjective norm (SN) indicated various changes. Greater interest was shown towards the acceptance of social media by PEOU and its impact on constructs such as perceived enjoyment over PU. In contrast, constructs related to SN gained overwhelming attention. The quality observation parameters of DeLone and McLean were extended in the context of social media by the addition of a social component or quality (Wirtz & Gottel, 2016). Researchers identified influences on PEOU, PU, and SN in the context of social media by several new variables.

A theory becomes a popular method for acquiring a greater understanding of a complex situation by having the following characteristics: parsimony, verifiability, and generalizability (Chintalapati & Daruri, 2017). The element of simplicity or just having fewer variables defines parsimony, verifiability refers to the support of data, and the use of theory applicable in multiple fields denotes its generalizability. The use of TAM helps

researchers to understand the acceptance of information systems and has emerged as the best model for explaining the positive inclination, behaviors, and attitudes of individuals toward new technology, which is the basis of its selection for this study.

## Integration of the ICT Phenomenon

Governmental organizations' use of computers may be traced back to 1890 when computers made an introduction into the annals of history. Representatives of the census bureau then sought the use of computers to help count the population of the United States (Zimmermann, 2017). Although the documentation of technology in government existed since the early 1960s, ICT became relevant to the governmental procedures and processes of some countries during the 1950s. Affiliating e-government with 'informatization' (the extent that an economy, geographical area, or society increases the size of its information labor force or become information-based) occurred when a report describing the use of 'telematics' (a combination of telecommunications and computers), and the possibility of assisting with building political and civil societies became public knowledge. This report, created by Simon Nora and Alain Minc, and presented to the president of France in 1979, explained that benefits might be achieved based on the concept of long-term planning specifically prepared for the collaboration of business and governments. Consequential developments of those early concepts may have helped pave the way for web 2.0, which share in the responsibility for shaping transformations in the e-government environment that provided greater access to users and allowed individuals to have more interaction, participation, and production of information (Al.Kharousi, 2016). The widespread use of

web 2.0 in academic libraries has the potential to improve research and users' learning capabilities, increasing motivation, and building a new study environment.

**Adoption and Use of IT Framework and Strategies**

An IT framework is used by a project manager and team during development to guide its design, implementation, and evaluation (Thomas, Li, & Oliveira, 2017). The widespread adoption of ICTs over the last 25 years has mobilized national incentives facilitating structural change and economic growth in the context of developing countries. At the same time, they are encouraging both developed and developing countries to adopt e-government that unleashes the potential to transform administrative systems and the public, for improving public services and efficiency (Gunawong, & Gao, 2017). The innovation diffusion literature shaped a large body of the adoption of e-government innovation theory. However, TAM influences various synthesized models relevant to the literature and integrates elements of innovative theory as a framework for studying the adoption of e-government (EGOV). EGOV represents innovative systems, and as such, the innovation diffusion theory is of specific relevance. The capabilities of diverse and disparate business organizations to set their vision towards mutually agreed and common goals beneficial to all involve knowledge and information sharing among organizations, through business processes supported by data exchanges between their respective ICT systems. Nonetheless, a major shortcoming to most ICT innovation adoption models is that their development uses micro-level analysis, requiring modifications necessary for

these models to reflect innovative reality-based adoption and implementation; changes that have bypassed organizational settings (Gunawong, & Gao, 2017).

While the economies of developing countries would realize a boost from e-commerce, a cloud computing-based model of e-commerce adoption may offer solutions to challenges faced by a lack of skilled professionals, insufficient delivery systems, and low internet and credit card penetration (El Said, 2017). Although cloud computing offers access to various strategic economic layers of low cost, reliable, and flexible internet-based infrastructure, little empirical validation exists for cloud computing in e-commerce adoptions. A survey conducted of 175 small, medium and large firms in Egypt revealed that business leaders in that developing country expressed optimism that a boom will occur in the years following adoption. The proposed cloud computing model adopted in Egypt reflected empirical validation of technical, organizational, and contextual factors that indicated the effectiveness of e-commerce adoption regarding governments, service providers, and businesses (El Said, 2017). The study unmasked various obstructions to e-commerce development that involved weak readiness of supportive industries such as customs administration, tax and banking, and lack of sound technological infrastructure. Government support and security concerns were more influential in Egypt compared to technologically developed countries, and the pricing of some models suggested excellent suitability for small and medium-sized businesses instead of large enterprises.

Gholami, Daneshgar, Low, and Beydoun (2016) investigated cloud adoption migration and proposed an evaluation framework for classifying approaches applicable to

cloud migration. Some research has focused on the best cloud platform, the best service provider, and suitable solutions (García-Galán, Trinidad, Rana, & Ruiz-Cortés, 2016). Due to the level of difficulty involved in selecting the best providers, services, and the most appropriate infrastructure configuration, a framework was necessary to assist the decision process for a successful migration. Khan and Al-Yasiri (2016) noted that the lack of knowledge regarding cloud computing hinders the adoption and migration efforts to the cloud. Yet, the lack of a unified process model remains one of the major challenges to cloud migration (Gholami et al., 2016).

**Developing an IT Implementation Framework.** The Caribbean and developing countries are experiencing an incentivized drive towards e-government for the delivery of simple and fluent services to their populations. Decision-makers may need a framework or systematic approach that will help to answer technical questions when estimating the readiness of an organization to compare and adopt the best solutions recommended by IT. Watchaton and Krairit (2019) described details of organizational information system (IS) implementation as a process of installing new technology innovation managed by policy-driven technical agreement(s), managerial decisions, and activities utilizing procedures for best practices, strategies, and techniques to guide the process.

Ali, Mazen, and Hassanein (2017) proposed the e-government framework, which captured elements such as technology, processes, strategic planning, and people. A four-phase model ranked e-government by creating four dimensions: technology, strategy, processes, and people with several constructs suggested under each dimension of the

framework in the form of a checklist that acts as a prototype. Under each dimension, verifying the presence or absence of each construct is possible by a public organization. Upon further review of previous frameworks, the following observations emerged. All frameworks are (a) conceptual but impractical without first establishing a way to use it that involves determining the steps/policy, and tools that guide its use. (b) solely dependent on influential factors to organizational readiness. (c) an assessment of a single solution with one objective and not intended for comparing multiple choices. (d) unable to identify any critical success factors associated with any one solution. (e) unable to identify a decision, reaction, or next step if the rate of readiness is very low (Ali et al., 2017).

Siddique (2016) has identified three major activities when implementing policy: policy interpretation, organization, and application. People who are involved with the processes of implementing the policy was also defined by Siddique (2016) as actors. Generalizing policy actors is difficult because of the vast diversity of each policy and its implementation, particularly in e-government domains. Despite that, it is unquestionable that effective e-government policy implementation is reliant upon techniques, strategies, and best practices. Positive results in IT project management demand incorporating sound techniques and procedures into policy implementation (Siddique, 2016). None-the-less, influential factors of policy implementation occupy two categories: external factors that are not likely to be controlled by the efforts of management, and internal factors that have a high probability of enhancing efficiency and performance.

Improving the preliminary framework to create the path for comprehensive cloud migration framework requires knowledge of how organizations acquire their innovative technology (developed internally or purchased commercially). Additionally, dismantling failed strategies through qualitative case study exploration could provide opportunities to conduct a needed postmortem on policies and standards used in the implementation of IT/ ICT integration projects that may provide a roadmap to higher success rates in specific environments. Thus, acceptance, infusion, and routinization may fill the gap that exists between the adoption of innovative technology and its absorption within an organization.

According to Alzahrani, Al-Karaghouli, and Weerakkody (2017), the utilizing of ICT to effectively make information and government services available to businesses, government agencies, and citizens is a process that fuels e-government, and participation of the public is critical to the success of e-government delivery of services. Alzahrani et al. (2017) noted that through consultation platforms, citizens might play a role in the design and formulation of public policies. Furthermore, to facilitate those activities, the creation of mechanisms for active listening, promotion of citizen initiative spaces, two-way channels, online petitions, and collaborative work platforms take center stage. There is room within these mechanisms for co-creation, co-design, and co-production of services, collective intelligence, and open innovation applied to public-social/public-private partnership, and public management. The concept of open government articulates that efforts to modernize public administration and improve the functions of government drive principles of openness, transparency, collaboration, and participation (Alzahrani et

al., 2017). A citizen-centric framework should reflect PEOU and PU concepts established by TAM. It is primarily responsible for setting the guidelines and characteristics of an adoption model.

An implementation framework assists practitioners within an organization in simplifying inherent complexities of policies and initiatives during the implementation of changes, and not become overwhelmed by it; implementation of sound IT governance policies (Sibanda & von Solms, 2018). A framework should provide a reference to the 'big picture' and ascertain full coverage of all relevant components of the implementation effort. An organization's culture or subculture is an underlying factor in implementing IT. Thus, understanding an individual's motivation and IT needs can assist the IT culture concept in explaining the complexities involved in the behaviors and actions of a person towards IT, which are critical to understanding how to best manage IT implementation (Abubakre, Ravishankar, & Coombs, 2017). Powell et al. (2015) echoed that the goals of implementation science involve identifying, developing, and testing strategies for implementation, amid complications from inadequate descriptions of implementation strategies and inconsistent use of language in the literature.

Research findings indicate that challenges to implementing ICT incentives and strategies to resolve them underscored lack of leadership ability, ineffective coordination of projects and ICT initiatives, unsatisfactory evaluation of ICT projects, and lackluster project and initiatives collaboration (Sibanda & von Solms, 2018; Tsokota, von Solms, & van Greunen, 2017). Isolated implementation of IT

initiatives has little to no chance of success, but an integrated approach that involves stakeholders and all levels of government collaborating to develop action plans and strategies is an essential element in the implementation of e-government.

The government's role in educating society is important to avoid the digital divide stigma that may affect certain segments of the society when considering a framework for the implementation of e-government. Applying the concepts of understanding awareness, interest, desire, and action (AIDA) to the population helps to develop a communication strategy necessary for introducing citizens to the offerings of new services and products that will benefit society (Mayasari, Hendrowati, Sofia, & Jakarta, 2017). TAM is used by researchers to explain how the willingness of individuals to use e-government's websites positively is affected by PEOU and influenced by SN. The perceived risk variable is also a factor that affects an individual's willingness to use e-government's website positively.

**Developing IT Implementation Strategy**. IT strategy is critically important for effective implementation, and without proper planning, the success of IT projects may seem to elude project managers. Although research literature on IT planning is abundant, not many research studies have targeted IT implementation, a crucial phase of IT strategy (Olivo, Guzman, Colomo-Palacios, & Stantchev, 2016). According to Olivo et al., huge improvements may be made to IT implementation in ICT organizations by the use of organization learning models (OLM) and the implementation of ICT tools. Two major research goals that would define an OLM framework include the determination of best practices resulting in enhanced knowledge at the organizational, group, and individual

levels. Secondly, the explanation and deployment of an ICT tool that may expedite the institutionalization of the OLM and its integration. The technology road-mapping technique is an ICT tool that allows the executive level management of an organization to decide what, how, and when implementing the specific IT strategy should occur (Olivo et al., 2016). Studies have indicated the importance of implementing IT-strategy because of the following reasons: not implementing IT strategies can result in a waste of resources, duplicated effort, incompatible systems, and loss of opportunities. Besides, firms express dissatisfaction and are reluctant to move forward with strategic planning in the absence or lack of implementation. Finally, due to the lack of proper implementation, the creation of more problems related to verifying and taking care of priorities could leave prospects for IT strategies at a disadvantage.

Wu and Chiu (2015) stated that the focus of research study points in the direction of practical ways of communicating and updating the status of IT innovation strategy implementation necessary for accomplishing competitive performance. The exclusion of an organization's learning model with the capability to manage the needed knowledge for communicating and monitoring the process of implementing innovation strategies is one crucial factor obstructing successful IT innovation strategies. Some barriers to strategy implementation include: (a) vague or incomplete strategy definition; (b) the absence of a comprehensive parameter, standards, and prototypes, etc. that support the implementation process; (c) inadequate sharing of knowledge or information and poor collaboration; (d) lack of clarity regarding responsibilities within the implementation process; (e) lack of

proper communication and inadequate planning within the organization; and (f) difficulty to communicate relevant information to stakeholders (Wu, & Chiu, 2015).

A plethora of models, implementation frameworks, and theories have resulted from empirical studies, practical experience, and a large reservoir of theories about the group, individual, and organizational change instigated by proposals of researchers from many different backgrounds. The proposals provided different approaches to predicting, guiding, or explaining the process of implementing evidence; implementation researchers used more than 100 theoretical approaches (Lynch et al., 2018). Soni, Dey, Anand, Malhotra, and Banwet (2017) expressed the need for proper management of all ICT-related applications, project development processes, IT implementation, and every component of e-government. These are considered the backbone of digital infrastructure support, privacy in various sectors, and information security. Challenges and barriers of sector alternatives such as administrative reforms, economic, technical, infrastructure, and social constraints hinder e-governance. They underline the grey areas that require effective implementation of e-governance (Soni et al., 2017). Although these barriers remain grey (incomplete), they provide legitimacy for assessing digital empowerment.

Dissecting strategies and performing an exhaustive examination of the current policies, guidelines, and procedures may reveal the true nature of critical building block components of decision making. The process may allow the research effort and directive to restructure new guidelines and practices that are appropriate for the environment in which implementation could reaffirm successful replicas (Ajibade, 2018). PEOU and PU

constructs of TAM must replace retired guidelines and policies that served unsuccessful deployments and implementations. A lazar-like approach to the reconstitution of revised measures set by criteria to guide a more robust implementation process should consider embedding key users' objectives that associate their attitude and beliefs with the adoption of new technological strategies. Greater rigor and validation by researchers' use of TAM may envelop the overall process. However, a few unknown variables contribute to users' perception of the usefulness of technology and how proficient it might be — for example, previous knowledge, experience, and skills (Ajibade, 2018).

According to Dwivedi et al. (2015), an analysis of the relationships which existed between perceived performance and IT leadership when implementing ICT indicated huge investments that resulted in high rates of failed ICT innovation in public service organizations (Hansen & Norup, 2017). Most importantly, the processes involved in the innovative implementation of ICT established a context for a paradoxical combination style of participative and directive leadership to thrive. Although the main focus of ICT innovation literature has been on technological and other factors, an examination of the various aspects of management and leadership factors that are pertinent to implementing strategies are directly related to successful implementation.

Muriithi, Horner, and Pemberton (2016) defined an ICT ecosystem as one that encompasses strategies, processes, technologies, policies, information, stakeholders, and applications that, in combination, make up a country's government or an enterprise' technology environment. Within this ecosystem exists people — diverse individuals who

buy, sell, create, manage, and use technology. Acquiring a greater understanding of ICT's actual effects on collaborative work demands an evaluation of their use from within this context and for a specific research environment. Several existing models may explain user acceptance of innovation and technology. For example, the UTAUT is an integration of eight common usage and technology models, including Rogers' theory of innovation diffusion and Davis' technology acceptance model. Factors that influence the use and adoption of IT include effort expectancy, facilitating conditions, performance expectancy, and social influences (Muriithi et al., 2016). Sociotechnical factors play a critical role in directly influencing ICT adoption and usage in different settings. Research shows that in environments where ICT resources are constrained, support infrastructure is a major aspect in decisions that determine the appropriate technology to use and the relevancy of sustained usage.

Developing economies or middle-income countries face many challenges within public administration practices in light of current technological and economic changes (Aladwani, 2016). None the less, increased implementation of ICT is crucial in the transformation of relations with business organizations, citizens, and government agencies (Joshi & Islam, 2018) in the race to enhance government capacities. An overarching tactical strategy reported by top performers in e-government who have established meaningful advantages is the consideration and use of public-private partnership (PPP) mechanisms that represented great opportunities (Almeida & Zouain, 2016; Joshi & Islam, 2018). Such strategies allowed the prioritization of services to

citizens and assured increased access to users instead of the dependency on tools and assets to provide these services. From the perspective of implementing strategies, the contractual relationship between PPP and similar tactical mechanisms outlined in institutional innovation should reflect cultural relevance in the criteria which instructs initiatives, policy decisions, and guidelines for implementation of a project or service.

Bayliss and Van Waeyenberge (2018) theorizes that sharing skills, competencies, and resources may reward a joint vision of innovative governance for making decisions. A few strategy-related concepts applicable to implementation criteria include clarity in explaining how changes in process factors will unleash changes in the outcomes of the specific implementation. Also, usage in empirical studies that validate or support results relevant to the theory or framework applied; applicability within different populations, settings, and disciplines; and provision of specified methods of creating processes for implementation/outcomes. Additionally, the inclusion of a figure or diagram that clearly defines the concepts and their interrelations; provision of step by step procedures or guidance; provision of detailed explanation of variables and effects and the ability for empirical testing; explanation of effects containing relatively few assumptions; and the ability for verification with empirical evidence (Birken et al., 2017).

Strategies proposed for use in the IT implementation framework are primarily geared towards the rigorous engagement to motivate easier and better implementation activities when executed, and involve: (a) creation of benchmarks for explicit service quality through increased pressure for implementation. (b) reduction of implementation

challenges, for example, enhancing shared understanding among employees and project teams. (c) establishing a project management office (PMO) as a supportive structure for all implementation/transformations. (d) a professional knowledge base that will provide adequate documentation, resources, initiatives, and project/policy guidelines to develop enhanced implementation and the capability to learn from experience. And (e) executing implementation, which involves the moving of resources to activities that add value from the perspective of citizens' satisfaction (Pedersen, 2018).

**E-services Solutions**

Electronic service (e-service) describes a sequence of digital interactions between a service provider and various users on their mobile/smartphone or web-based systems delivered over the internet. E-service adds value to the receiver (Jansen & Olnes, 2016) due to low-costing and time-saving amenities. ICT, a major facilitator of e-services adoption in e-government, e-training, e-health, e-finance, e-marketing, e-learning, e-trading, e-commerce, and e-business, etc., offers many advantages to citizens, including reduced overhead costs and operations, greater availability and customizations along with optimized business processes. Overall, users experience a higher quality of service. The adoption of digital technologies like smartphones, computers, and the internet by the world's population has impacted internet penetration passing the 50% mark as of January 2018 (Al-Dabbous, Abdulsalam, & Al Dallal, 2018). Therefore, a logical assumption is that the demand for e-services from governments will increase over time. The following

discussion seeks to reveal the adoption of a few important e-services that could enhance e-government's effort to provide needed services to developing countries:

**E-commerce**. Electronic commerce is a tool used by individuals to maximize reductions in the economic gap between countries via the use of internet channels for the delivery of services and products. Opportunities are offered to both buyers and sellers to become a source of competitive advantage, primarily in emerging economies. The main advantage of e-commerce is the opportunities presented for business organizations to expand their customer base.

Worldwide trade is transforming competitiveness in global organizations due to the use of new millennium tools like ICT and the emergence of e-commerce (Villa, Ruiz, Valencia, & Picon, 2018). While there is an uptick in the number of organizations that are opening communication channels to facilitate these types of trade activities, e-commerce opportunities have enhanced trade relations with customers. Overall, changes in global trade due to e-commerce are revolutionizing Asia, but its influence is felt in different areas of the world also, and developing at different rates (Awiagah, Kang, & Lim, 2016; Pappas, Kourouthanassis, Giannakos, & Lekakos, 2017; Xu, Munson, & Zeng, 2016). Developed and emerging countries have sought the use of e-commerce more, where its influence is rapidly increasing acceptability levels. Adjustments to consumerism and the way people shop by direct contact opens a variety of alternatives to obtaining goods based on consumer needs. Organizations that previously offered traditional channels for

purchasing products are now utilizing these alternative methods through virtual channels to establish handsome profits.

Providing the business sector with alternative channels to new markets demand a greater understanding of the adoption of e-commerce and behaviors in the context of economics and society in ways that have not yet emerged or studied. Because of the socio-cultural differences among emerging and developed countries, every adoption process would respond according to different social, cultural, and political dynamics, which create challenges to studying technology acceptance in diverse contexts. The decision process involved in the adoption of e-commerce technologies takes into consideration relative novelty as a factor of influence in such innovations; however, the implementation of these new technologies becomes more unpredictable. That being the case, factors that influence the application of e-commerce have been investigated by several studies that found variations in the objectivity of the study, along with economic, cultural, and social contexts where this technology was adopted. Establishing generic models for adequate analysis of the issue is refuted by various influencing factors (Villa et al., 2018).

Research studies and academics explained the phenomenon of e-commerce adoption with the intent of encouraging its use from many fields like the diffusion of innovation (DOI). The use of this integrated model of e-commerce adoption for small to medium-size enterprises (SMEs) in emerging economies introduced possibilities of identifying factors that would determine e-commerce adoption. They involved perceived

compatibility, perceived risk, perceived usefulness, perceived complexity, and perceived ease. The dynamic games theory is another approach that examined competition among internet retailers and traditional retail companies. On the other hand, statistical techniques were used by other researchers to identify similar factors. Research studies on gender and identity exposed influences on the implementation of SMEs and the impact it had on the adoption of e-commerce. According to Awa, Ojiabo, and Emecheta (2015), a qualitative approach indicated that environmental and organizational factors were influential to e-government adoption.

The concept and arrival of e-commerce during the late 1970s specified many advantages to consumers for online shopping. It provided the ability to compare prices from various retailers (Chaparro-Peláez, Agudo-Peregrin, & Pascual-Miguel, 2016) and covered many forms of administrative and business transactions executed through ICT. The original idea of e-commerce emerged as a process of buying, selling, or exchanging information and services with devices such as computers, tablets, and smartphones using the internet. Several researchers have discussed the adoption of cloud computing and e-commerce in developing countries to leverage current digital transformations that could lead to penetration of global markets and induce national economic growth (Almarabeh & Majdalawi, 2019). Many frameworks and theoretical models have been used by researchers to study different e-commerce characteristics such as the drivers for individual consumers and SMEs' behavior regarding technology acceptance, the criteria

for innovation diffusion, and dimensions of cultural influence (Goyal, Sergi, & Esposito, 2017).

The TAM is a prominent theory used, together with the TRA, unified theory of acceptance and use of technology (UTAUT), and the task-technology fit model (TTF), to examine relationships between perception, beliefs, attitudes, commitment, and trust factors of users involved in the adoption of technology (Goyal et al., 2017). Several empirical studies have used these theories to explain the user's behavior within the e-commerce space.

**E-government**. Electronic government (e-government) delivery of government activities and services was deemed an internet application originally. However, recent enhancements made by e-government in creating more effective communication between organizations and citizens through the modernization of high-speed internet connections offered faster processing and higher quality services and systems, representing the latest government contribution to technology (Shuib, Yadegaridehkordi, & Ainin, 2019). The Malaysian ICT experience implemented e-government applications to enhance the quality and delivery of services offered by the government to improve its efficiency. Processes and information flow enhancement, along with increased network speeds and quality of policy, enforcement, and development (Kamaruddin & Noor, 2017), introduced a new approach to doing business. Research conducted to gain a better understanding of factors that influence the usage of government applications and satisfaction towards it, found that trust in the government, compatibility, computer self-efficacy, image, relative

advantage, and customer satisfaction impacts the usage of all government application (Shuib et al., 2019). As a result, users' satisfaction had a positive influence on the use of government applications.

Governments throughout the world now realize the strategic importance of ICTs to deliver critical services to citizens who are becoming more aware of the many unique opportunities presented by access to the internet, and to gain the trust of those citizens (Carter, Weerakkody, Phillips, & Dwivedi, 2016). E-government has become a popular phenomenon among countries worldwide. Nonetheless, developing and less developed countries are slower to discover the implications of e-government to better the lives and livelihood of their populations (Carter et al., 2016). Twizeyimana and Anderson (2019); Manoharan and Ingrams (2018) warned that the successful adoption of e-government is dependent on greater public engagement. As such, one of the challenges for some governments is e-government's immature adoption status. More in-depth research focused on investigating the perceptions of citizens towards e-governments' adoption in the Caribbean and developing countries are necessary. Studies conducted in developing countries include: studied adoption of e-government in Africa (Verkijika & De Wet, 2018); examined usage behavior of e-government services among Israeli citizens (Rosenberg, 2018); factors that directly and indirectly influence e-government adoption in India (Kumar, Sachan, & Mukherjee, 2018); and Abu-Shanab (2017) investigated the role of e-government familiarity on the intentions of citizens in Jordan. The perceptions

of citizens are the main drivers of successful e-government adoption, and more vital research is necessary to fill that gap.

Previous research studies have broadly considered various factors for enhancing the adoption of e-government, service delivery success, and use. The preferred theories selected to study the use or adoption of technology include TAM, TPB, UTAUT, TRA, DOI, the IS Success Model, and FIT. The most commonly used model is the TAM that has gained recognition, agreement, and attention from many technology professionals and academics. A comprehensive meta-analysis indicated that TAM had gained prominence as one of the most used models applied to the studies of e-government (Rana, Dwivedi, & Williams, 2015). Alzahrani et al. (2017) believed that once the study is in the context of e-government, the most appropriate theory is TAM. This perspective gets support from Husin, Loghmani, and Abidin (2017), who studied the Malaysian e-government adoption. TAM was used by Warkentin, Sharma, Gefen, Rose, and Pavlou (2018) to study the population of undergraduate students within three U.S. universities and the students' perceptions of the iVoting system. Although most studies recognized TAM as the best theory for investigating the adoption of technology, expanding the power of TAM's predictive and exploratory capability may be achieved by combining it with theories such as adoption and diffusion theories. In other words, both TAM and DOI may complement each other. An evaluation of fourteen articles on e-government adoption found that TAM was adopted in the study of ten articles, while four studies combined DOI and TAM (Warkentin et al., 2018).

E-government increases the public's trust in government by allowing citizens to participate in the information age and interact with the government (Hariguna, Hung, & Sukmana, 2019). Stakeholders are involved in many new ways to help resolve challenges in the process that make the government more accountable and transparent (Hariguna, Lai, & Chen, 2017; Rghioui, & Oumnad, 2017). Various theories and methods regarding the intention to use IT/IS have been instrumental in IT implementation and adoption, yet none can explain concrete sustainability of IT/IS usage. The argument made is that the effective performance of e-government services may result in expectation confirmation and PU, which should generally have a more decisive impact on user's satisfaction with e-government (Hariguna et al., 2019). Few studies have combined cognitive-based and personality-based antecedents with e-government implementation to understand the behavior of citizens' intention to use e-government services. However, many studies today use the expectation-confirmation model (ECM) as the main framework that allows researchers to understand and predict the intention of users to use information technology and information systems.

The ECM, which arose from the expectation-confirmation theory (ECT), has adopted three dimensions involved in achieving user intention in the area of IT, namely: expectation confirmation, satisfaction, and perceived usefulness (Hariguna, & Berlilana, 2017). The main differences between ECM and ECT are the use of ECT by researchers to describe pre-consumption and post-consumption factors. In contrast, ECM is used by researchers to examine constructs that are post-acceptance and also to assess the effects

of pre-consumption and post-consumption expectations. PU is an additional concept of ECM. The ECM theory states that users will obtain the intention to continue the use of IT/IS after fulfilled expectations experiencing the use of IT/IS (Hariguna, & Berlilana, 2017). Citizens' activities are critical to the sustainability and readiness of e-government and, as such, play a large role in researchers' use of ECM during the implementation of IT/ICT. The implementation of e-government regards citizens' satisfaction as the primary success factor because satisfaction influences intention within the ECM model in e-government services implementation. IT/IS researchers agree that user's satisfaction with prior use is the main determinant of continuity intentions to use information technology and information systems (Hariguna & Berlilana, 2017).

**E-health**. The rapid growth of internet connectivity across the world may be explained by a global cultural shift and pervasiveness of technology, as reflected in the United States. During 2015 the ownership of smartphones accounted for nearly 54% of the world's population, with steady increases in smartphone ownership and internet usage projected in the coming years. Western culture has been impacted by technology from the way customers shop for goods and products in supermarkets to visiting the doctor, as online prescription orders and access to private medical records become routine practices (Magsamen-Conrad, Dillon, Verhoff, & Joa, 2019). Furthermore, request for individuals' participation in mediated conversations utilizing various technological innovations, including multiple devices and interfaces, may have broad health implications. The use of IT by a wide range of people from all backgrounds help them to address chronic health-

related challenges, enable independence, health self-management, and to deliver health education with the use of personal computers, smartphones, and tablets (Chung & Nahm, 2015). However, people without the necessary skills to use IT and individuals with less accessibility to IT are impacted by both social disadvantages and digital inequalities (Robinson et al., 2015).

Researchers have used the UTAUT model in studies that identified factors affecting the intention of users to adopt new technologies (Dwivedi et al., 2017; Rana, Dwivedi, Lal, Williams, & Clement, 2015). Theories regarding the use, acceptance, and adoption of technology have been developed and tested by scholars for many decades. Although none have claimed the ability to predict and explain health behavior, the development of several prominent technology-driven adoption theories, such as the behavior change theory, has roots in theories frequently used in health communication. The UTAUT is one such tested theory that was developed to give user's technology acceptance a parsimonious explanation and has achieved wide confirmation. Advancing important health communication research requires an in-depth understanding of IT adoption and use related to health but serves a unique purpose in the health context. Increased privacy concerns particular to healthIT are inherent in sharing and seeking health information (Magsamen-Conrad, Dillon, Billotte Verhoff, & Faulkner, 2018). Further, the focus of UTAUT research is on mandatary adoption and organizational use primarily within the workspace, with few studies investigating or evaluating voluntary, daily, and casual adoption (Al-Azawei, 2018).

**Emergence of Electronic Health Record (EHR) Systems.** Electronic health records (EHR) have emerged as a key instrument for promoting healthcare knowledge and awareness among healthcare professionals and patients. EHR helps improve collaboration between governmental bodies (Hossain, Quaresma, & Rahman, 2019), plus improve the quality of healthcare, enhance efficiencies, and make improvements in patient safety. Palojoki, Pajunen, Saranto, and Lehtonen (2016) described an EHR system as a digital repository of patient's information for safe storage and exchange of data. Reference to EHRs as software platforms explains their use by physicians to create, update, store and maintain patients' information, with ICT playing a leading role in computer-assisted triage, computer-based order entry, and telemedicine (Jallow, Demian, Anumba, & Baldwin, 2017; Wu, Kao, & Sambamurthy, 2016). A recent study indicated that EHR systems are instrumental in decreasing patient readmission numbers related to chronic diseases. EHR adoption may facilitate retrieval of health information allowing validity tests for the quality of data, research, and making better treatment decisions (Sundqvist & Svärd, 2016). Considering these revelations, a new meaning to the era of management of healthcare information (Webster, 2016) allows easier access and exchange of healthcare information to healthcare professionals, physicians, and patients in Canada. The result of an investment by the Canadian Government will realize a potentially improved quality of life and healthcare for patients and reduced healthcare-system costs for Canadians. There are generally two types of e-health applications: EHRs, managed by physicians, and

personal health records (PHRs), which enables patient access and management of their health information and is a subsystem of EHRs.

Despite challenges to PHRs and inadequate legislature, several studies have indicated a nudge in Canadian e-health technologies towards PHRs (Razmak & Bélanger, 2018). However, overcoming challenges and barriers may necessitate connecting human behavior to technology as a strategy that could predict the end-user adoption of PHR systems. Studies emphasized comparing the perspectives of participants with perspectives of physicians through the role of intervention and by the addition of new constructs to TAM. E-health concepts like patient portals EHR and PHR may be new for some patients, including patients familiar with PHR (Razmak & Bélanger, 2018).

In actions that purport to guide future healthcare policymakers and as sub-objectives, the study heeds physicians' perception of Canadians' increased awareness of PHR systems, their attitude towards PHRs, and the overall ability to manage all of their medical information using a PHR system. Previous studies have shown a reluctance by physicians in developing countries like Bangladesh to adopt new technologies (Hoque, Albar, & Alam, 2016), due to the worry that the existing practices at work may change, and workflow may be interrupted by e-Health systems (Ferraz & Guedes, 2017). There is more optimism with patients for the usage of e-Health systems than Bangladesh doctors (Hoque, Bao, & Sorwar, 2016). Though a 2009 signature legislature in the United States sought the adoption of EHRs that would minimize medical and prescription errors and reduce high death rates, the healthcare system has been a contentious issue and slow to

fully embrace IT adoption (Gopalakrishna-Remani, Jones, & Camp, 2018). Nonetheless, testing of four well-known constructs embedded in TAM helped to evaluate the Canadian e-health study to predict the attitude of patients towards the PHR systems. Gaining a better understanding of the perception of physicians towards their patients' ability to manage e-health information is an incomplete picture for the willingness of a system to be adopted because those attitudes originate strictly from the provider of healthcare. More investigation of the PU and PEOU of PHR is necessary from the patient's point of view regarding adaptability.

Understanding how influential interventions may be to known determinants of IT use and adoption would allow an explanation of the rationale for using the TAM. Having the highest quality information about patients' and healthcare providers' preferences, attitudes, and perceptions towards applications of e-health and PHR is critically important. The field of e-health applications and populations recognize TAM as a dominant theory for acceptance and use of technology studies. Dr. Fred Davis developed TAM as a theory that measures behavior-relevant components of attitudes and extended Ajzen and Fishbein (1975) TRA. TAM provided explanations of the determinants of computer acceptance, generally capable of accounting for user behavior across a wide range of end-user computing technologies and user populations; while at the same time staying theoretically justified and parsimonious (Davis, 1989).

The definition of e-health is the use of ICT for health purposes, and by its wide usage and implementation in e-health systems such as smart hospitals, telemedicine

systems, smartphones, mobile health systems, and EHR, has emerged as the foundational service for affordable health care, responsiveness and accessibility (De Pietro & Francetic, 2018; Oderanti & Li, 2018). Researchers admit that dramatic improvements to worldwide, regional, and local delivery of healthcare services are available through the proper implementation of e-health systems. However, due to the requirements of interdisciplinary experiences, the inclusion of different fields, and exceptional security for patient information protection, many challenges exist in the effort to develop an efficient e-health system. Al-Sharhan, Omran, and Lari (2018) explained that the solution might derive from an implementation framework and integrated national e-health model that encompasses effective security and a mandate to deliver efficient and high-quality e-health services. This approach, deemed holistic, must incorporate assurances of the standard of healthcare services envisioned and expected by citizens (Dwivedi, Shareef, Simintiras, Lal, & Weerakkody, 2016)

Al-Sharhan et al. (2018) evaluation of numerous problems related to e-health implementations resulting from managerial, cultural, technical, financial, and competencies impediments revealed a new e-health model containing a layered-based implementation framework. This approach was comprehensive and consisted of all the success factors, including a new EHR security model. The design of the new model focused on improved health output by proposing an independent layered architecture, the Capability Maturity Integration Framework (Al-Sharhan et al., 2018). A major challenge to e-health adopters is the lack of a unified implementation foundation for e-health

projects and the absence of a well-established system of governance to guide the implementation processes and best practices.

**E-learning.** An important component of ICT's e-government related services used over the internet to empower citizens is e-learning, and to assess how the technology may be accepted or rejected by users, a method to measure the views of users who were impacted by the technology is necessary. E-learning is an educational process driven by ICT that provides training, educational services, and programs for trainees and students anywhere and at any time (Tatnal, 2019). Davis (1989) development of TAM was used by Salas and Moller (2015) to evaluate a new e-learning application and PEOU of the faculty relative to the voice thread and its use. The researcher's use of TAM helped to indicate any PU toward the technology of e-learning.

TAM was also used by Okantey and Addo (2016) to establish factors that influenced e-learning adoption at universities in Ghana with e-learning applications stored in cloud storage systems. Adjustments were made to TAM so that it could utilize institutional factors by recruiting 600 lecturers as a sample from Ghana's public and private institutions. Resolving the relationship between the adoption of e-learning and institutional factors occurred by conducting a correlational analysis (Okantey & Addo, 2016). Ten faculty members took part in the study done by Salas and Moller (2015), one male and nine female participants. Five adjunct professors and five full-time employees created diversity in the study.

The evaluation of students at various university locations with cloud technology enlisted the following researchers; Ramírez-Correa, Arenas-Gaitán, and Rondán-Cataluña (2015), and later adopted the e-learning technology. Examination of the relation between external controls and PEOU facilitated a determination of the technology adopted. Hence, information regarding the acceptance of new technology by faculty when implemented in an academic institution may assert profound value. Although previous studies made firm decisions to adopt e-learning applications and systems, including access to cloud storage, data collection, and analysis, they used various pools of participants and different tools. The use of TAM by researchers as a critical assessment tool facilitated the determination of technology's impact introduced by the e-learning platform, which allowed both providers and users to be beneficiaries of the adoption of e-learning (Ramírez-Correa et al., 2015).

Challenges posed by globalization and the changing world forces international and regional relationships, where international business competitiveness for the survival of Caribbean businesses is possible only if interdependence is high (Leite, Pahlberg, & Aberg, 2018). Thus, the development and deployment of high-tech innovations like ICT, cloud computing, and mobile technology are dependent on research and development (R&D) short life cycles and costs vital for rapid innovation (Eslami & Lakemond, 2016). The emphasis of a growing body of study regarding TAM's use in the development of m-learning only highlights specific perspectives of the theory (Marangunić & Granić, 2015; Mortenson & Vidgen, 2016). Many reviews offered a constructive synthesis of TAM, but

much more investigative data is necessary based on the perspectives presented by those studies.

The concept of e-learning demands well-developed guidelines to ensure that learning outcomes are of the highest quality (Marciniak, 2018). Researchers have identified four areas of online quality indicators, which include course designs, course activities, assessment, and technology that are necessary for enhancing the quality of online courses. Researchers also suggested having thematically developed content, attributes of educational technology, learning strategies, learner profiles, and techniques used to assess the learning process. In the interim, online education quality components were intimated by Marciniak (2018) by providing clarity on the elements of learning assessment routines, the virtual classroom environment, learning interests, program objectives, and the thematic nature of the content. Online learning technology has made vast improvements in the learning and teaching process of many institutes of higher education and universities (Quadri, & Ahmad, 2019) and continues to develop lifelong learning models.

Implementation of the e-learning architecture as components of cloud computing poses many advantages such as cost savings, improved performance, any time data availability, e-learning software updates, and benefits to students and instructors. A broad discussion regarding the challenges and advantages of using cloud technology in e-learning is evident in many studies (Quadri & Ahmad, 2019), indicating a growing momentum. Rodrigues, Almeida, Figueiredo, and Lopes (2019) supported the view of an

extensive debate to define the concept of e-learning. Researchers generally utilize the theory of critical success factors (CSF) in studies concerning information systems and e-learning that are relevant to the effective implementation of cloud-based e-learning. Factors that would determine the implementation or execution of cloud-based e-learning in institutions of learning is dependent on the awareness, attitude, understanding, and consent of top management.

**M-learning.** Investigation of TAM relative to m-learning research is limited within the current literature reviews. It lacks the proper classification of those research studies from the perspective of disciplines/contexts, research purpose, research methods, education levels, country distribution, and TAM studies distribution that specifically highlights their year of publication. Almaiah, Jalil, and Man (2016) indicated the importance of understanding the trend of TAM research and the determinants of users' acceptance of m-learning in clarifying critical ongoing issues by IS scholars.

M-learning enables the sharing of ideas, collaboration among learners, and helps exploit the untold potential of the learning experience (Al-Emran, Elsherif, & Shaalan, 2016) by using mobile services. Time and location create no restrictions on m-learning capabilities, but its acceptance and use by end-users is one way for the technology to be successful. The adoption of m-learning is an active research area (Tatnal, 2019). Before a research study can begin a rigorous literature review, it is essential to improve and expand the theory and develop the foundation of accumulated knowledge. An attempt was made by Mortenson and Vidgen (2016) to automate the analysis of research articles'

abstracts by conducting a computational literature review that investigates the use of TAM. An analysis of the research articles considered research team ranking, individual researchers' ranking, journals' ranking, and research domain. Researchers used TAM to evaluate the acceptance of mobile-based assessment created via the use of semantic web technologies by computer science students in Tunisia. Wai, Ng, Chiu, Ho, and Lo (2018) used TAM to research undergraduate student's perceptions of m-learning usage in various facilities in China by qualitative and quantitative methods. Mota, Ruiz-Rube, Dodero, and Arnedillo-Sánchez (2018) evaluated educators' usage of the visual environment for designing interactive learning scenarios (VEDILS) with the use of TAM. Researchers also used TAM to evaluate nursing undergraduate students regarding their acceptance of m-learning in universities in Ghana.

A large knowledge base may help businesses' rapid transformation in every industry from e-government services, e-commerce, banking, and healthcare by acquiring access to external knowledge due to the limited availability of internal knowledge. According to Mohammed, Alzahrani, and Alfarraj (2018), m-learning may enhance and revolutionize distributed systems regarding the professional use of resources and provide opportunities for cost savings. The concept of m-learning, however, has the potential to expand the learning technology across continents. The attitude of individuals who use m-learning forecasts its acceptance (Iqbal & Bhatti, 2015); therefore, readiness regarding m-learning, background, and knowledge of participants will be the focus of such a study. Based on PU and PEOU, researchers used TAM to evaluate the acceptance of e-learning

and m-learning. Iqbal and Bhatti (2015) acknowledged the strength of TAM as a research framework and an ideal choice for investigating the acceptance of users when adopting new technology. Many studies have identified the connection between usefulness and a positive attitude (Iqbal & Bhatti, 2015), with PEOU and PU emerging as the common link integral to the acceptance of the technology.

Several studies have correlated PEOU and PU to the adoption of new technology, and TAM based studies indicate PEOU and PU direct effect on behavioral intention; the probability that an individual would decide to use a specific technology. This approach was used by Iqbal and Bhatti (2015) to explore factors that could potentially affect m-learning adoption among university students and to determine whether PEOU and PU had any impact on their ability to use m-learning applications stored at various locations. A study was also conducted by Balavivekanandhan and Arulchelvan (2015) to gain a deeper insight into how students felt about the influential factors of m-learning usability. Students who were more IT literate were selected by the researcher to determine if m-learning technology realized any usefulness. The number of students who participated in the study totalled 892 originating from the Engineering, Science, and Art colleges. Online questionnaires were issued to students to get their feedback about PEOU and PU regarding new technology adoption, allowing researchers to gauge the responses from participants based on the grouping of questions in determining whether the technology should be adopted (Asiimwe & Grnlund, 2015). The researcher's determination of PEOU and PU when utilizing TAM in the study as it applied to mobile technology and users of

m-learning demonstrated the importance of its use. TAM was used by various technology researchers to ascertain an advantage by determining the acceptability of new technology, personal feelings about the usefulness of the technology, and the technology's usability.

Conceptual approaches are important in understanding the processes linking ICTs' use to measures of outcomes, outputs, or impacts (Saba, M., Saba, P., & Harfouche, 2018). Extensive knowledge of IT implementation initiatives is provided by information systems research with the revelation by (Saba et al., 2018) that conflict and resistance among future IT users are major reasons for failure. IT project failure may often result in severe consequences that directly impact organizational intelligence, the ability to resolve problems through collaboration within a group of individuals where recognition of the problem through collective action is achievable by organizations. Approaches to in-depth research vs. cross-sectional data collection were explored by Saba et al. (2018) regarding the relationship between IT implementation initiatives and organizational intelligence.

The apotheosis or high-point of e-learning development in the 1990s (Traxler, 2018) quickly shaped web-based searches into mobile-learning, where technology innovation had tailored many resources and activities toward ICT for development (ICT4D; Kabanda, & Brown, 2017). Novel m-learning technology in education envelops any learning innovation based on the flexibility of knowledge and information delivered via a portable handheld device. Research indicates that students' behavior towards the use of smartphones empowers student-centered learning (Kabanda, & Brown, 2017).

Current literature on the determinants of m-learning acceptance related to TAM is vague and remains a subject of ongoing scrutiny by researchers (Almaiah et al., 2016). Obtaining a more knowledgeable perspective of the m-learning dynamics of acceptance will serve a higher purpose to inform researchers of m-learning when investigating factors not contained in the overall body of literature. According to Al-Emran et al. (2016), the sharing of ideas and the learning process via m-learning is enabled by the internet that, in turn, allows informal collaboration. Successful m-learning systems improve faculty and students' delivery of academic and instructional knowledge successfully. A few theories or models associated with the acceptance of m-learning include TAM, IDT, and UTAUT. TAM has overall support and preference due to its soundness, simplicity, and adaptability.

Readiness is an individual variable affecting the usefulness and acceptance of m-learning that originates from object-related experience or the action of an individual (Lin, H., Lin, S., Yeh, & Wang, 2016). It is directly related to the usage of an object or the occurrence of an action. Organizational readiness is a valid context that an action like change management may occur, and readiness to adopt new technology is another context used by an object. Learning is also an action that may occur, as in the context of readiness to learn. Mobile learning readiness (MLR) is a concept at the intersection of readiness to learn and readiness for technology adoption. MLR is the propensity of an individual to use or embrace mobile technology to accomplish informal and formal activities (Lin et al., 2016).

**Perceived Risks to IT/ICT Implementation**

During IT/IS implementation, resistance behaviors and users' conflicts are critical issues that can hinder project delivery and instigate negative outcomes. Regardless of the extensive knowledge base of user acceptance, conflict, resistance, or the task-technology alignment literature that emphasizes IT projects continuum, sparse data are available that address resistance behaviors impact which occurred in recent IT projects. Potential causes for project failure due to actual resistance behaviors need to be anticipated by IT project managers, but the realization of previous conflict behaviors must also be analyzed (Saba et al., 2018). Researchers have exposed evidence of conceptual foundations that coincide with statistical research information indicating that most IT projects in the Caribbean and developing countries fail to reach completion. A reasonably high rate of project failure may be attributed to the lack of knowledge and talented IT project teams and managers, inadequate training, inefficient management and planning, budget and time shortfalls, and IT implementation frameworks that may be incompatible with the environment where they are applied.

While Ali, Zhou, Miller, and Leromonachou (2016) explained that user resistance is a major impediment to successful IT implementation, Glyptis et al. (2020) defined the main risks impinging the adoption and implementation of e-government as the economic factors like ICT costs of acquisition and high maintenance. Technical difficulties arise in the process of implementation and adoption of ICT, such as lack of shared standards and infrastructure compatibility among departments regarding the security and privacy of all

information (Glyptis et al., 2020). Social and cultural issues include people's preferences, experiences, orientation, and expectations concerning e-government. Organizational and institutional factors highlight a lack of training, qualifications, and limited management capabilities. Legally, because of the institutional dimension imposed upon e-government, policy and procedures must be supported by regulations and laws. Without a proper legal framework, e-government may be vulnerable.

Research in IT over the last twenty years has generally focused on the theoretical contributions that surround technology acceptance, diffusion, fit, and adoption. The TAM is the preferred user-acceptance model in this research study compared to the constructs of other theories due to its parsimonious nature that simplifies tests and operational ease. TAM facilitates the measuring of many other variables and the impact on PEOU and PU (Wu et al., 2016). Caboral-Stevens, Whetsell, Evangelista, Cypress, and Nickitas (2015) used TAM in the healthcare industry to support a study whereby the potential for older adults to use health care websites favored a particular framework. The research findings ascertained that the conceptual model's determinants of usability involved learnability, perceived control, perceived user experience, and efficiency. The acceptance of IT and information systems was positively affected by attitudes, mobility, and perceived trust, while environmental risk and perceived reputation were positively and negatively related to perceived trust.

## Transition and Summary

Section 1 of this proposal contained a preview of the foundation of the study and a brief review of the background to the IT problem. This section included the purpose statement, nature of the study, research question, interview questions, conceptual framework, and a review of the professional and academic literature. The literature within this section focused on the strategic alignment of the specific technical problem that necessitated the research with the research question and purpose statement. A qualitative research methodology and multiple case study design were the best approaches for this study. This research study helped to foster a better understanding of the underlying components of the integration aspects of IT projects by unravelling strategies used in the process that affect implementation.

In section 2, I presented a more detailed description of the researcher's role during data collection along with the purpose of the study, the participants in the study, the collection of information, and instruments used in the study to collect data. I addressed the question of the potential for researcher bias in the study while offering clarity about the understanding of the researcher's relationships with participants, topic, ethics, and the Belmont Report guidelines. Eligibility criteria and the selection process of participants were discussed, together with data collection techniques, data organization techniques, and data analysis procedures. Section 2 provided readers with a more comprehensive understanding of the researcher's and participant's duties in the study. The ideas offered may create trustworthiness and appreciation for the research and the findings presented.

## Section 2: The Project

A qualitative multiple case approach worked well in this study because it allowed me to scrutinize data collected that directly impacted current IT standards, policies, and strategies used by project managers during the implementation of IT. I engaged with the population of IT project managers in Eastern Caribbean countries employed with medium to large businesses and government, who have accrued a minimum of 2 years of project management experience delivering IT/ICT driven solutions. I performed data collection via face to face interviews with a final listing of qualified selectees. The potential social impact will ultimately include the possibility for enhancements to current implementation knowledge, policies and practices affecting Information technology that may improve the success rate of ICT integration and project implementation. Thus, delivery of important wide-ranging sociotechnical benefits to citizens.

### Purpose Statement

The purpose of this qualitative multi-case study was to explore the strategies used by IT project managers to implement IT frameworks designed to guide Caribbean ICT integration. The targeted population for this research comprised of IT project managers and professionals who delivered IT services and support within the business sector and government institutions of two countries in the Eastern Caribbean basin: Grenada and St. Vincent and the Grenadines. Data collected for this case study was derived from face to face interviews, organization documents, and peer-reviewed journals of research experts. This case study may support positive social change by devising effective strategies that

are necessary for the delivery mechanisms of e-government services. These services include e-commerce, e-health, and e-education components consigned to the region through de-facto ICT initiatives. As a result of the study, technology researchers may acquire a better grasp of the developmental needs of e-government to enhance citizens' access to online government services, transparency, and accountability. Evolutionary transformations in teaching and learning and improved growth in industries are also a few important broad-ranging benefits to the Caribbean populace.

## Role of the Researcher

My role as the researcher included the skillful crafting of interview questions that probed the participants for intricate details. Also, it included selecting the most qualified candidates, managing the research process by scheduling interviews, asking participants questions that were not seemingly interrogatory, listening attentively, avoid judgement, journaling observations, and remaining interested and involved (Sanjari, Bahramnezhad, Fomani, Sho-ghi, & Cheraghi, 2014). The researcher's role as the primary data collection instrument in the qualitative multiple case study was to start and perform the collection of information (Unkovic, Sen, & Quinn, 2016). This involved gathering high-quality data from more than one source, such as face to face semistructured interviews, observations, documentation, and records. The collected data were reviewed, organized, interpreted, and analyzed. Corti and Van den Eynden (2015) noted, researchers could attain deeper insights into the experiences and behaviors of research participants. The participants of this study originated from a list comprised of randomly selected project managers in each

island nation. A few of my trusted associates provided suggestions about their preference for selectees with connections to Caribbean businesses and governments.

Published in the Federal Register in 1979, the Belmont Report served as my moral and ethical guide throughout the data collection process. This summary of useful, ethical guidelines created by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (Belmont Report, 1979) addressed issues related to privacy, consent, anonymity, and protection of the information obtained from all human participants. Foundational aspects of this study were consistent with the human subject research protocols and guidelines presented in the Belmont Report that establishes an outline for principles which include beneficence, justice, and respect to participants of the study (Van Praag & Sanchez, 2015). A requirement for the collection of data to remain appropriate to the study is one of the tenets of the Belmont Report (Unkovic et al., 2016), and I vowed to stay devoted to those protocols of basic ethical standards throughout my research study. I also used the protocols and regulations for human subject research endowed at Walden University in addition to the Belmont Report. Participants were made aware of their rights, and I ensured their full understanding of the potential risks and benefits of sharing personal experiences and information in the study. All participants received equal treatment.

Throughout my long tenure in information technology, I have been a team player involved in supporting small and large project implementations from time to time. During this period, my responsibilities were never directly assigned to the project manager's role

but focused on the engineering side: performing configurations, troubleshooting, using strategies and techniques, conducting root cause analysis procedures to identify the exact cause of system problems, diagnosing the problem, and finding resolutions to sometimes very complex technical issues. My introduction to technology in the fast-paced financial industry (banking) as a consultant allowed me to gain a significant understanding of the hardware side of computing and market data equipment on the trading floor; I supported all the business units. My transition to software support took place a few years later while employed as a senior infrastructure engineer supporting EHR. I have attained a causal understanding of the logistics, integration, and interaction of both hardware devices and software/middleware components while supporting a wide array of technologies. Based on my experience in information technology, I rendered a conscious effort to be aware of and set aside any preconceived notions that may potentially develop during the pursuit of my research study goals. Although Devotta et al. (2016) gave assertion to an enriched experience of research practice due to self-reflexivity and insider knowledge, I was duty-bound in my approach to document all biases that could potentially jeopardize my research effort.

The incentive for taking detailed notes and verifying adequate procedures for the audio recording of participants came from Fletcher, DeMassis, and Nordqvist (2016) insistence of reduced validity in research findings due to lack of reflexivity in building rapport with participants, and conducting fieldwork and analysis. Keeping a journal to document data collection and analysis processes could help identify preconceptions that

may influence the results of the research. Researchers must convince readers that the results of the study are credible and accurate by using methods that are appropriate, valid, and credible (Whitehead, Crowe, Bugge, & Coppell, 2016). Developing a relationship of trust between a participant and the researcher should seek reflexivity and subjectivity. I applied critical self-awareness in my approach, which enforced trustworthiness with each selected participant. Participants for this research originated mainly from the two Eastern Caribbean countries: Grenada and St. Vincent and the Grenadines. The territory referred to as the Caribbean comprises a chain of islands surrounded by the Caribbean Sea, which borders the Gulf of Mexico, the Straits of Florida, and the Northern Atlantic Ocean to the east and northeast. The South American coastline lies to the south. A greater number of islands occupy the Eastern Caribbean than the Western Caribbean. Technically, an island that has a coast on the Caribbean Sea may be considered a Caribbean island. The total population of the entire Caribbean in 2019 approximates 44.5 million people, which is equivalent to 0.58% of the world's population.

The responsibility of the researcher, according to Fusch and Ness (2015), is to mitigate any bias that could potentially affect the quality of information collected and analyzed. As the primary instrument for data collection, the researcher may experience some form of difficulty controlling their biases while interviewing participants (Roulston & Shelton, 2015). The use of open-ended questions that do not influence the participant's response in any direction can avoid bias during an interview. Bengtsson (2016) cautioned about the influence a researcher's prior knowledge about the subject matter may have on

the collection, coding, and overall analysis. My experience in IT project implementation and management was integral to this research, and the type of questions that I prepared were for the sole purpose of extracting valuable information through interviewing participants. However, being cognizant of potential bias and the negative impact that could result, every effort was examined to minimize bias. Bengtsson (2016) explained that researchers could minimize their personal influence or potential bias with the use of bracketing. I ensured reliable results by using bracketing and transcript review. I had no prior personal or professional relationships with any participant that was part of this exercise. After the interview questions and responses were analyzed and verified, the information was presented as stated with caution not to cause any misinterpretation or misrepresentation of any information.

Minimizing bias transpired with the use of a well-developed interview protocol that contained prepared semistructured, open-ended questions designed to probe deeper insights into the participants' experiences. The process extracted effective strategies that were used by current IT project managers. Moser and Korstjens (2018) reinforced that qualitative researchers used semistructured interview protocols to capture rich, valuable information from participants by allowing them to discuss their personal experiences with a phenomenon. An introduction of the topic to the participant preceded critical follow-up questions that were asked to get an understanding of their perspectives (Axson, Giodano, Hermann, & Ulrich, 2017). An interview protocol assured that the information gathered by the researcher provided the appropriate answers to the research question (Yin, 2018). I

used an interview protocol that consisted of (a) an opening statement. (b) simple, open-ended interview questions. (c) sharp and probing questions. (d) participant's responses to validate codes and themes noted during the interview. (e) follow-up questions to clarify the participant's previous answers or statements, and (f) reflective notes and observations by the researcher. The interview protocol provided guidelines for a balanced process that treated participants equally and fairly by asking the same set of questions to everyone.

## Participants

The criteria for selecting eligible participants must be defined purposively by the researcher to include the most eligible participants capable of answering the research question (Johnson, Adkins, & Chauvin, 2019). Yin (2018) maintained that establishing specific criteria for participants may ensure that all the collected data remains appropriate and adequate. IT project leaders have extensive IT experience making decisions and implementing strategies related to IT hardware and software projects while working for organizations. Generally, participants with lengthy experience and knowledge about a phenomenon are more adept at making important decisions and are eager to participate in research (Marshall & Rossman, 2016). I selected participants who were currently IT project managers and employed at medium to large businesses or employed by the governments of targeted Caribbean nations. Participants were 18 years of age and older, with a minimum of two years of project management experience. They had applied strategies to IT project implementations or ICT integration efforts as solution-driven initiatives. Qualified individuals met the requirements of set criteria and had a proven

record of experience in integrating technological innovations in business dealing with project implementation issues.

Potentially qualified participants may contribute their important information to the research study by first seeking permission from gatekeepers and leaders for engaging with their employees and requesting the use of their sites for this purpose. For greater success, Gioia, Corley, and Hamilton (2013) advocate for a standardized accessibility practice when recruiting participants in a research study. Establishing contacts with all participants and gaining their approval to become part of the qualitative research may be a stressful and time-consuming undertaking (Monahan & Fisher, 2015). Once I initiated contact with the selected participants, I secured important contact information, including their primary phone number and email address. I then made a distribution list to disburse emails to participants to give them advice about the research study and to solicit their support, corporation, and interest to participate. Maintaining an organized contact list and the use of text messages are high-tech approaches (Sampson & Johannessen, 2019) that were important for initiating the first contact with participants, introducing the study, and defining its purpose.

Upon receiving approval from the institutional review board (IRB), I e-mailed a letter of invitation to selectees, which helped to determine their willingness to participate in the research or their acceptance. Based on that determination, the next step involved reviewing the consent form with the most qualified participant chosen before scheduling the interview. A formal research protocol by researchers is to present participants with a

consent form to be signed before participating in the research. An outline specifying the confidentiality associated with their participation in a research study was the main item included in the form. The consent form also contained information regarding the rights of every participant to withdraw from the research for any possible reason, at any time they choose. Building a strong working relationship with each participant was the way I tried engaging to gain their trust, allowing for a major starting point to a successful outcome. I aspired for openness and transparency by providing detailed information concerning the study's objectives, the interview protocol, and the confidentiality that every participant must have. I made a sustained effort to provide honest answers and feedback in response to all the concerns and questions of participants. The disclosure of all related information requested by participants was a principle I abided by, one which qualitative researchers use to build solid working relationships to remove impediments to evaluating protections for human research participants by IRBs (see Grady, 2019).

When the participants for the study were confirmed, the follow-up action involved scheduling face to face interviews at their availability in a setting of their choosing (Yin, 2018). Preferably, the interviews with participants occurred at their place of employment, in a secluded room, which enhanced the participant's comfort and allowed for free speech without any restrictions. A relaxing environment for the participants was the goal. Patton (2015) noted that having a general discussion and engaging the participant in somewhat light chatter before the interview increases trust. Inducing general conversation without bombarding the interviewee with initial questions will set a warm atmosphere. Asking

questions about the participant's concerns, such as how their day was going, may serve to remove signs of tenseness and put the participant at ease and in a more interactive mood.

## Research Method and Design

Research methodologies include approaches such as quantitative, qualitative, and mixed methods (Yin, 2018). The design of the research study connects the data collected by a researcher to the research question and conclusions drawn by the researcher via a logical link (Yin, 2018). I used a qualitative research methodology and a multi-case design for this study and emphasized selecting the most qualified IT professionals to fill the role of participants. Selected interviewees originated from medium-sized and large businesses and various government establishments within two countries in the Eastern Caribbean: Grenada and St. Vincent and the Grenadines.

### Method

A qualitative research method was an appropriate choice for the study. Qualitative research generates insights, intelligence, and data from a human environment and is a process of inquiry that is non-measurable (Creamer & Tendhar, 2016; Sarma, 2015). A qualitative approach is mainly used by researchers to gain a deeper understanding of the meaning constructed by participants and how they make sense of their experiences in the world, and to interpret various events, cultural environment and material objects (Bakker, 2019; Yin, 2018). I intended to obtain a more comprehensive understanding of project managers' experiences of the phenomenon that I investigated. The researcher's rigorous analysis can illuminate the complexities of human behavior of the participant's lived

experience (Raskind et al., 2019) within the participant's natural environment. A detailed review of the work done by Bakker (2019), Sarma (2015), and (Yin, 2018) offered me a sense of assurance that the qualitative method I selected for this research study was the most appropriate for communicating with IT project managers and professionals. The qualitative method allowed me to better engage participants with open-ended questions in semi-structured interviews and to observe participants in their daily natural environment. According to Yin (2016), social phenomena are interwoven and complex and cannot be segregated, deduced, or reduced by variables; thus, the use of qualitative methods best addresses social phenomena. The researcher's ability to discover patterns and themes facilitates qualitative inquiry and provides excellent opportunities crucial for researching a complex phenomenon. These opportunities may also allow further discovery of hidden themes and patterns by researchers and manipulated to generate important meaning from the data compiled through semi-structured interviews.

A quantitative methodology hinges on standardized data collection by researchers using surveys and closed-ended questionnaires for statistical comparisons. Podsakoff and Podsakoff (2018) referred to the power of experimentation as powerful techniques for demonstrating causal relationships between variables. Antonakis (2017), Eden (2017), and Hauser, Linos, and Rogers (2017) argued that experimentation is the "Gold Standard" of scientific research. Hence, research using a quantitative methodological approach applies mathematical, objective statistical or numerical instruments as points of emphasis when collecting data through experimentation, surveys, and structured

questionnaires (Lee, Shin, & Lee, 2015). Obtaining statistical data using this method was not practical for this study because quantitative methodology encourages the use of variables and testing hypotheses' viability using statistical analysis (Michaelson, McKerron, & Davison, 2015). Typically, quantitative research is selected by researchers when there is a need for empirical data to test theories. McCarthy and Muthuri (2018) encouraged the use of a quantitative approach when the researcher needed to predict, explain, and describe the outcomes of a research question's variables. Since this research was focused on exploring the strategies used by IT project managers to implement IT frameworks designed to guide the integration of Caribbean ICTs, and not test a hypothesis, the determination was that a quantitative approach would not be appropriate for this study.

A mixed-methods study would have added no substantial benefits because this research can be done effectively with only a qualitative approach. A mixed methodology synthesizes a hybrid approach by combining concepts, techniques, and styles of qualitative and quantitative researches (McCusker & Gunaydin, 2015) that will offer a cumulative reservoir of knowledge to create a more granular level of understanding of the data. Mixed methods researches are a confluence of both qualitative and quantitative methods (Bromwich & Scapens, 2016) centered on the research question, context, and purpose; and may not be dependent on the quantitative methodology (field study and experiment) to develop a holistic presentation of the phenomenon to present the findings (McCusker & Gunaydin, 2015). The integration of quantitative and qualitative methods

inherent in a mixed-methods approach fits seamlessly in longitudinal studies (Kachouie & Sedighadeli, 2015; Podmetina, Volchek, & Smirnova, 2015; Ramlo, 2015). The use of mixed methods in research may circumvent the potential limitations that exist in a single research study. The research study I conducted required a profound understanding of the phenomenon relative to the integration of technological innovation and how strategic implementation occurs. The exploratory nature necessary for the research method did not allow me to select a mixed-method approach.

**Research Design**

A multiple case research design created the best exploratory mechanism for this study because of its function to ensure clarity in the answers obtained to the research question, based on the collected evidence. Qualitative research consists of designs that give researchers the ability to select various approaches including ethnography, narrative, phenomenological, grounded theory, and case study. The case study design is commonly used by research scholars to explore answers to research questions of the phenomenon (Dumez, 2015; Yin, 2018). This concept is supported by Wilson (2016) assessment that the relevance of the research question determines the collection of evidence for use by a case study design. Yin (2018) stated that achieving analytic generalization is an incentive for using case study research designs; on the other hand, use of statistical generalizations is synonymous with quantitative studies. Yin (2018) suggested that a case study design could be reinforced to ascertain additional credibility and reliability that is attainable by the use of multiple cases instead of a single case study. Multiple case studies separately

evaluate each case within the context, then draw conclusions that provide a more holistic exploration approach (Dasgupta, 2015). Dasgupta posited the appropriateness of multiple case types of research when the research question implies a cross-case analysis. A multi-case study design acquires the techniques and tools that are best suited for exploring a phenomenon and allows the researcher to obtain a much better understanding of the nuances of a phenomenon (Yin, 2018). I selected a multiple case study design equipped with embedded inquiry techniques and the ability to capture in-depth details by exploring the experiences of participants within multiple firms in a similar industry (Yin, 2018). Participants in this multiple case study had the opportunity to share their strategies used to implement IT deployment frameworks designed to guide ICT integration in the Caribbean.

Phenomenology is the science of phenomena or the philosophical study of the nature and structures of consciousness and experiences of a person. In other words, a phenomenological research design explores the interpretation of people's lived experiences or how people show appreciation for their lives (Charlick, Pincombe, McKellar, & Fielder, 2016). The experiences of human beings viewed through the lens of individuals who were involved in the phenomenon are applicable when the experiences and perceptions of those individuals are mainly to investigate a phenomenon or event (Finlay & Elander, 2016). The main interests of phenomenological researchers are to explore the personal experiences of individuals or their reaction to a situation or event (Manen, 2017; Neubauer, Witkop, & Varpio, 2019). Additionally, phenomenology is a

critical aspect of a researcher's effort to capture relative data about a participant's attitudes, ideas, and opinions (Sambhava, Nautiyal, & Jain, 2016). When research is involved with multiple organizational populations, using a multi-case study may be more advantageous than phenomenological research. Merriam and Tisdell (2015) opined that the main purpose of a phenomenological study involves the portrayal of a basic structure of the participant's experience by the views they espouse. A detailed first-person account captured primarily via interviews is the basis for phenomenological research (Gentles, Charles, Ploeg, & McKibbon, 2015). This research design approach helps researchers to gain deeper insights into psychological, cultural, and social issues (Bawa & Watson, 2017). The phenomenological research design lacks synergy with the research question, and my research study did not seek to collect data regarding the lived experiences of participants.

Ethnographic research design helps researchers understand a group of people or a culture, giving them the ability to identify and analyze cultural practices and actions, shared feelings, and experiences. Researchers choose an ethnographic study to describe the culture of group systems based on document analysis, observations, and interviews (Wall, 2015). Yin (2016) noted that a researcher involved in an ethnographic study becomes engrossed in the group to grasp a better understanding of the environment's culture and immerse themselves in a community of interests to seek knowledge about systems of people within their cultural contexts (Sarmento, Gysels, Higginson, & Gomes, 2017). Experiences and timelines are used by ethnographic researchers to examine an

individual's routine and practices of data collection. The systematic exploration of locally observed data over extended periods forms the definition of ethnographic research (Cappellaro, 2017). It is appropriate for exploring the beliefs, experiences, and behaviors of a cultural group (Reyes, 2020). Ethnographic designs are also used by researchers to investigate the cultural connections and patterns of people in a group to attain cultural perspectives (Morgan-Trimmer & Wood, 2016). An ethnographic research design would not have been useful in this study because investigating the cultural significance innate to the analysis of a cultural phenomenon of society was not my objective.

Narrative research design focuses on people's lives told by their own stories. A narrative design did not apply to my study. Researchers are interested in using a narrative research design when the research question demands that the life story about the specific research subject be told (Jeppesen, 2016). Rooney, Lawlor, and Rohan (2016) stated that participants recap life events and happenings in a narrative design by telling their life stories. Incidentally, storytelling helps convey important information about individuals when a researcher uses a narrative design (Bell, 2017). Exploration of past experiences, then organizing the time frames that captured these experiences into a meaningful compilation of sequences of consequences established by the timelines of the events, is the gist of what narrative research offers (Seal & Mattimoe, 2016). Whereas ethnography fosters a greater understanding of the shared experience of a group having common attributes, a narrative research design presents an account of a phenomenon. None of the two designs offered good choices in this research due to my intentions not to explore a

system of belief or to narrate. I also ruled out a grounded theory design because of its focus on the building of theory in a social setting and conceptual thinking (Bakker, 2019). Phenomenological, grounded theory, narrative, and ethnographic designs did not show the rigor of exploratory capability that multiple case types of research have indicated. Thus, a multiple case design was the most appropriate for this study because it allowed data triangulation to achieve a rich understanding of the various challenges and strategies crucial for addressing the research problem.

I ensured that the qualitative multi-case research study design that I decided to undertake achieved data saturation by the skillful extraction of participants' perceptions, attitudes, feelings, emotions, and self-directed behavior thought crucial for understanding the phenomenon explored in this research. According to Kang et al. (2016), the saturation of data is an important dogma in the context of qualitative research study that researchers endeavor to attain. Fusch and Ness (2015) warned that the quality of research might be compromised, in turn, hampering the content validity if data saturation is unattainable. I continued to interview participants until achieving data saturation. The agreed measures among researchers to determine data saturation include no new data, no new themes, no new coding, and the capacity for the study to be replicated (Fusch & Ness, 2015). None the less, there is more to data saturation than no new emerging categories and themes, as the properties, variations, and dimensions of those categories also develop and establish links and relationships to other concepts (Pourvakhshoori, Norouzi, Ahmadi, Hosseini, & Khankeh, 2017). Hennink, Kaiser, and Weber (2019) stated that saturation determines the

sample size of the qualitative research study. Until recently, there has been no available methodological literature dedicated to estimating the number of interviews needed to reach saturation in qualitative research conducted with purposeful samples (Hagaman, & Wutich, 2017). However, by closely following the criteria created for selecting qualified participants, the projected 12 eligible participants chosen to provide rich exploratory strategic information helped contribute, cultivate, and sustain a culture of openness and innovation. Before analyzing the data for themes and patterns, I scheduled 12 follow-up telephone interviews for transcript review and document review to achieve saturation (Thomas, 2016). Data collected through face to face semistructured interviews were also validated by the transcript reviews, further establishing credibility and accuracy (Hays, Wood, Dahl, & Kirk-Jenkins, 2016) before commencing data analysis. I opted to remain proactive by having a contingency plan to reschedule additional interviews with participants if data saturation did not happen during contributions made by 12 primary qualified interviewees.

## Population and Sampling

The population targeted for this multiple case study included professional and experienced IT project managers currently employed with several medium and large businesses in various industries and government institutions in two Eastern Caribbean countries: Grenada and St. Vincent and the Grenadines. Because of challenges facing the region, no current or dated datasets regarding IT/ICT and the population size of project managers exist. The estimated population size of IT project managers in each country

was six based on the assessment that interior infrastructure development recently begun. None-the-less, the sample size used for data saturation was 12 participants: ten selected from Grenada and two from St. Vincent and the Grenadines. These IT project managers emanated from the governments and business organizations of both countries. A sample size of 12 participants was determined adequate for this study based on the judgement that the data collected may support the depth of case-oriented analysis fundamental to this mode of qualitative inquiry. The reasoning for sample size offered by Chowthi-Williams, Curzio, and Lerman (2016) is that case studies may vary from less than ten to more than ten participants. To participate in this study, a project manager had to be knowledgeable about implementing project management (PM) policies and strategies but meet the following criteria: (a) should be 18 years of age and older. (b) must have a minimum of two years of PM experience. (c) have applied strategies to IT project implementations or ICT integration efforts as solution-driven initiatives. (d) qualified individuals must meet all requirements of the set criteria. Selecting a population sample (a subset of IT project managers) allows the researcher to identify appropriate data and minimize the number of available participants (Malterud, Siersma, & Guassora, 2016).

Census sampling is suitable in situations that investigate a small number of cases that need to collect data on all members of the population. Gokmen et al. (2017) noted that qualitative case study researchers frequently used purposeful sampling primarily when opportunities to select random samples pose some level of difficulty in representing tools of measurement (Palinkas et al., 2015). Also, allowing the thoughtful selection of

participants with experience and knowledge about the phenomenon (Bungay, Oliffe, & Atchison, 2016) when researchers intend to illustrate critical data (Benoot, Hannes, & Bilsen, 2016). Census sampling was used in this research and is applicable when there is a need to invite all participants who meet the specific criterion for participating in the research study. Using a census sampling method allowed individuals with a high level of knowledge and expertise to be identified (Pogrund, Darst, & Munro, 2015). Since the sample population in this research was small, census sampling was the most appropriate choice. Ultimately, case studies focus more on the richness of data collected, the wealth of information provided by the interviewee, and the type of study conducted instead of population size (Guest, Namey, & McKenna, 2017). The implication for the population sample is that 12 knowledgeable, professional, and eligible IT project managers were able to participate in census sampling and shared their experience and knowledge.

In qualitative research, the dominant concept for sample size is data saturation (Malterud et al., 2016), where ample information obtained could replicate the study, and further coding is impractical. Reaching saturation is contingent on obtaining information of value; therefore, obtaining complete information from all participants in the study was important in the selection process. Nevertheless, the possibility exists that scheduling more interviews may not have produced new data from participants (Fusch, & Ness, 2015). The use of transcript review verified the reliability, accuracy, and validity of the data collected to ensure the credibility of my research study upon reaching saturation; when a comprehensive understanding of the data materializes, and no new substantive

information was acquired. Each participant was allowed to review the interpretations I presented in the transcript, with the capability of providing supplemental information or modifications (Burda, van den Akker, van der Horst, Lemmens, & Knottnerus, 2016; Simpson & Quigley, 2016). A participant's review of the transcript obtained from the interview process is equivalent to a transcript review and establishes a rapport between a researcher and participants during the collection of data. However, the transcript review certified data authenticity and trustworthiness (Thomas et al., 2017). A key caveat to note is the presence of intentional and unintentional researcher's and participant's bias in all aspects of social research that could permeate the research. The following actions helped to expedite obtaining proposed sample size and reliable results (a) selecting appropriately qualified participants. (b) encouraging a professional relationship. (c) being present for scheduled interviews and considering the participants' availability. (d) finding a secure environment that was conducive for interviewing, and (e) asking open-ended questions.

The design of 12 open-ended interview questions that I proposed for this research targeted all the participants for retrieval of the specific information related to the research question and involved thoroughly interviewing each IT project manager: thus, enabling saturation. Guetterman (2015) argued that when conducting research, no predetermined number of participants would guarantee saturation. Once saturation occurred, collection of the data ended. Conducting interviews with only qualified participants ensured saturation (Moser & Korstjens, 2018)). I intended to conduct follow-up interviews if necessary.

Collecting data through face to face interviews allows the retrieval of firsthand information by a researcher. Dejonckheere and Vaughn (2019) define an interview as a dialogue between researcher and participant where an interview protocol is used to guide follow-up questions, probes, and comments. Pacho (2015), Peters and Halcomb (2015), Dejonckheere, and Vaughn (2019) explained that case study researchers use face to face interviews to gain an understanding of the world from the participant's point of view and to capture the meaning of their experiences. Consideration of the interview settings and modality was given (technology-mediated interviews, and face to face) for primary and follow up interviews, and potential strategies for conducting interviews. The proposition made by Irani (2019) inferring that a relaxed, familiar, and comfortable environment for interviewing participants should be free from distractions was important to garner an accurate and informative interview. Upon receiving signed consent forms and approval from the IRB, I scheduled the face to face interviews with participants. I then moved to negotiate a suitable environment and location that abided by the critical need for privacy to facilitate the participants' comfort in a 30 to 60-minute interview. Participants had the option to withdraw at any time.

## Ethical Research

The ethos of ethical research emphasized protecting the rights and wellbeing of participants (Wallace & Sheldon, 2015), and ensuring the highest level of integrity and ethics was of utmost importance in the research study. An evaluation of my research study was conducted by the Walden University IRB to ensure that all IRB standards for

the participants' protection were ethically intact and administered. An assigned approval number indicated IRB approval of this research study and was attached to the final doctoral manuscript.

A major part of research ethics involved the understandable informed consent terms regarding participants of research (Tam et al., 2015). The generation of such an informed consent form, along with an IRB approved process, validated the informed consent procedures for this study. Contents of the informed consent form included a notice to participants of the study that their participation was without risks and strictly voluntary and recording of the interview entailed their consent. It was a requirement for participating and the purpose of the study. Participants were not offered incentives beyond the beneficence of their contribution to the results of this study, which is an area for potential ethical concerns raised by Resnik (2015). I informed participants of their rights contained in the consent form regarding any specific incentives for participating in the study before the research started and as part of the informed consent process (Yip, Han, & Sng, 2016). These contributions made voluntarily by participants at their own volition will help to improve business practices, add to the body of knowledge, and create positive social change. Informed consent forms were disseminated to participants via e-mail upon their acceptance to be fully involved in this research study. I asked participants to review the informed consent form and return a signed copy via e-mail stipulating the following: *I Consent,* the participant agreed to the informed consent terms to participate in the study. The rationale for distributing consent forms to participants was to boost their

confidence and to allow them to share their experiences and information freely with the guarantee that I would have ensured the confidentiality and safety of their data.

Researchers should aim for high participant retention following recruitment, but participants must be assured clarity of their right to withdraw from participation at any time during the process (Upjohn & Wells, 2016). Before obtaining information via the consent form, participants understood well that their withdrawal from the research study (before, during, and after collection of data) would not have been penalized or led to any consequences, and they could have done so whenever they wished by written notice or verbally. Withdrawal request acceptance would have occurred immediately, and the data collected at that point would have been destroyed and excluded from further analysis. This research upheld the following three major ethical principles, beneficence, judicial representation of human subject protection in research and key ethical trepidations, and respect for all persons. As stipulated by the Belmont Report, honoring the fundamental values of ethics regarding human research subjects' security was paramount in this study (Belmont Report, 1979). A copy of the national institutes of health (NIH) training certification of completion issued by the office of extramural research is attached to Appendix C, affirming my successful completion of the NIH online education module, "protecting human research participants." Walden University's procedures and guidelines for proper ethical conduct also guided my activities during the execution of this research study.

Addressing key aspects in the application of research ethics included maintaining confidentiality, participant/researcher safety, anonymity, informed consent, data storage, and data protection (Barnard, 2016). The letter of invitation sent to participants contained in Appendix B was designed to request the participant's permission to participate in the research. Before scheduling interviews with any of the participants, I obtained a request containing each participant's signature on the consent form indicative of confirmation of their participation in the study. Two copies of each consent form were needed. One copy of the signed consent form was made available to the participant for their safekeeping and the other put into storage. The Belmont Report provided strict instructions regarding data that linked participants' information elicited during scheduled interviews via the National Commission for Protection of Human Subjects of Biomedical and Behavioral Research (1979). The incorporation of such guidance in the consent form outlined the protection of data at all times. It gave instructions on the destruction of data at the earliest possible time when no longer needed.

The language contained within the consent form was very explicit in my endeavor to protect all information gathered during this research. Electronic file formats included (audio-recordings analysis, e-mail communication, files, and transcripts). Notes and other documents were recorded in a journal and on paper. I further developed anonymity using pseudonyms to protect people's and organizations' names, locations, places of residence, occupation, cultural and religious background information, family types, and any other personal information of the participants (Saunders, Kitzinger, J., & Kitzinger, C., 2015). I

saved a backup of every instance of original electronic information on an external or USB drive. A secure fireproof combination safe located in the privacy of my home office was designated for secure storage of the data accumulated from this research in the form of paper, electronic files, folders, and USB/external drive and will be maintained for five years. I am the only person who knows the combination of the fireproof safe, and I am the only person that has access to it. The original working electronic data was password-protected on my personal computer. I was the only person with access to that device and the single person with the knowledge of all passwords. Frequent backup procedures were scheduled to update the secured external device manually. Five years after the collection of participant's data, I will systematically destroy all information and data by shredding all paper notes. The personal password-protected computer used to store electronic data will be scrubbed by permanently expunging files with electronic data, and similarly for the USB/external drive. All research subjects, participants, and their organizations will be guaranteed the integrity of the research; thereby, providing all assurances of data security and confidentiality.

## Data Collection Instruments

During this qualitative research, I was the primary data collection instrument. Gabriel (2015); Sorsa, Kiikkala, and Astedt-Kurki (2015) explained that generally, researchers are primary data collection instrument due to their involvement in mediating the data through the human instrument, instead of using inventories or machines or questionnaires. The type of data collection instrument used determines what level of

influence impacts the collection process and the time-span of a participant's interest in providing information (Rimando et al., 2015). The interview protocol (Appendix A) included a list of 12 semi-structured interview questions, which was another instrument used for collecting data from participants of this research. The interview protocol was an essential instrument used to capture relevant information from the participants, including their position within the organization employed, employment background, and introduced the research study. However, it did not include the collection of any other demographics. Spillane, Larkin, Corcoran, Matvienko-Sikar, and Arensman (2017) advised that having a reflective journal is an expedient way to keep track of decisions made, the rationale for those decisions, critical thoughts, and how researchers apply their thinking in the field while acting (Ibrahim & Edgley, 2015). A reflective journal helped me to document the holistic view of my experiences, and challenges I experienced during research (Orange, 2016), and the unpredictable qualities of my personality that may have impacted the research study. Field notes were critical for capturing contextual information associated with procedures for conducting the interview, and I used various instruments above for collecting data in this research.

My objective as the primary data collection instrument was to ask prepared open-ended questions to participants during scheduled semistructured interviews and to take detailed notes about the interviewee's non-verbal communications that I observed. I also reviewed documents that were publicly available to explore project managers' strategies for implementing IT deployment frameworks designed to guide the integration of ICTs in

the Caribbean. The semistructured interviews elicited rich data that were germane to the research question and qualitative research topic. Yin (2018) specified that semistructured interviews could potentially yield rich, insightful, and detailed information concerning a participant's experiences, perceptions, and attitudes. Personal one on one interviews with participants generated rich and more enlightening information than anticipated. Follow-up questions were also important during semistructured interviews to gain deeper insights (Morse, 2015b) and to clarify points stated earlier in the interview. Secondary sources of data such as observations, notes, organizational documents, and websites are beneficial to deep analysis (Gross, Blue-Banning, Turnbull, & Francis, 2015). I told all participants in advance that no incentives would have been provided for their participation (Yip et al., 2016). They were free to opt-out of the research without repercussions at any time they determined that it was in their best interest to do so.

In qualitative research, multiple sources of data and methods such as observation field notes, note-taking, document review, and interview transcripts minimize errors or bias (Johnson et al., 2019) and add rigor and validity to an investigation. I reviewed all documents that were available publicly through regional government offices, and IT and business organizations to obtain an understanding of the IT strategies that were used by project managers in their implementation of ICT-driven project initiatives. Corroborating evidence originated from organizational documents provided by partner organizations, IT policy/strategy documents, and implementation guidelines retrieved from organizations' web sites. I requested permission to access information or copies of any such documents

the organization or interviewee may be able to allow me access. According to Morse and McEvoy (2014), the trustworthiness of qualitative research findings improves by using multiple data sources. Other essential documents fit for reviewing may include reports, meeting minutes, and other publicly available documents that would help researchers to establish a better understanding of answers gleaned from research questions. A holistic framework for research that contributes to facilitating triangulation will ultimately result when multiple sources of data are used (Singh, 2015a). I sought to use a methodological triangulation approach in this multiple case research study by negotiating interviews with multiple informants, reviewing the documents of partner organizations, and by acquiring access to some publicly available documents on company web sites. An academic theory might be retrievable from an organization's archived data and used to compare different feasible techniques. I requested access to such important documentation from participants during the interview process but was not successful. Yin (2018) confirmed that the option of collecting archived records in qualitative case studies is another secondary source and beneficial because the information may not be accessible publicly. Other archived data that could have emerged, if available, included national ICT plans, government ministry's records, and files collected through the document review process. Several components of Yin's seven data types that are appropriate for case studies include documentation, direct observations, archived records, interviews, and physical artifacts.

Reliability and validity could increase when researchers use techniques such as transcript review and triangulation to address the credibility issues (Moser & Korstjens,

2018). Phases of the data collection process included framing of the research questions, assessment of semistructured interview questions (Appendix A), interpretation, the data analysis, and discovering participants and individual themes (Balasubramanian, 2017; Martinus & Hedgcock, 2015; Simpson & Quigley, 2016). Also, making certain that the interviews were in sync with exactly what was implied by participants (Ghiga & Stalsby, 2016) in the presentation of findings. Confirmation that the interpretation of the interview contents as represented by the researcher in the findings were accurate (Ang, Embi, & Yunus, 2016; Birt, Scott, Cavers, Campbell, & Walter, 2016). Participants were allowed the opportunity to identify and provide affirmation of their own words before completing the analysis of the interview rather than after coding, via transcript review (Enosh & Ben-Ari, 2016). Participants enhanced the credibility and validity of the data but also confirmed no gaps were present in the information (Fleet, Burton, Reeves, & DasGupta, 2016; Nagasaka, Bocher, & Krott, 2016). Thus, authenticating the credibility and validity of instruments used in the research study (Caretta, 2015; Grieb, Eder, Smith, & Calhoun, 2015; ODonnell, Tierney, Austin, Nurse, & MacFarlane, 2016; Thomas, 2016). A review of the transcript ensured the participant's intended meaning (Varpio, Ajjawi, Monrouxe, O'Brien, & Rees, 2017) and affirmed the reliability, confirmation, and validity of data.

## Data Collection Technique

Case study researchers use various sources such as interviewing and document review to gather data from qualified participants (Yazan, 2015). Yin (2018) reflected upon the following six sources that can elicit evidence in case studies: archival records,

participant observation, direct observations, interviews, documentation, and physical artifacts. Some critical tasks included collecting, preparing, analyzing, and interpreting the data. My qualitative multiple case research used the techniques that involved face to face semistructured interviews comprised of open-ended questions and all documents provided by the participants and organizations, reviewing of documents available to the public, and observation to collect data. Before data collection had begun, IRB approval was received along with distributed invitation letters to participants and receipt of letters of cooperation from partner organizations. I requested permission from participants by a signed consent form explaining the study and giving them the option to withdraw at any time they desired to do so during the study. Frankfort, Nachmias, and DeWaard (2015) suggested that contact should be made with participants to schedule the date, time, and location of the interview after the consent form was signed and returned.

Preparation of thoughtful, thorough, and penetrating questions were available for scheduled interviews that were part of the protocol of a case study. Showing expertise in collecting data occurred by way of the inclusion of an interview protocol (Appendix A) that guided the proposed process for collecting data, which in turn, maintained a level of consistency in the efforts to collect valuable information. A more fruitful inquiry directed case study investigation through a semi-structured interview whereby the researcher has the flexibility to be creative enough during the interview to ask important questions that guide the participant. However, a consistent guide was evident when using the interview protocol. Following a line of discussion that the interviewee indulged, the researcher can

probe further by follow up questions to accomplish deeper insights into the subject matter revealed (Dempsey, Dowling, Larkin, & Murphy, 2016). Engagement in data collection processes with a prescription for consistency and thoroughness in the research case study consolidated the dispersal of the study objective during each interview after permission to proceed was granted by participants. This practice allowed the initiation of preliminary discussion with the interviewee about transcript review procedures and ways of enforcing techniques by using open-ended interview questions. Quality assurances and the accuracy of participants' transcript in the research interview process was foundational in acquiring validity and accuracy of the data. Clark, Birkhead, Fernandez, and Egger (2017) divulged research findings that indicated a final and interview-approved version of their transcript retained utterances and silences. This occurrence in their judgement was meaningful but led to the disclosure of eliminating unnecessary noise and distractions from the transcript review during the verification process.

**Document Review**

Data collected and corroborated by reviewing valuable organizational documents and publicly available documents revealed detailed information regarding the technical restrictions, historical contexts, plans for information systems' layout, implementation, and related strategies and policies. A review of these documents corroborated statements made during the interviews and responses to questions. Supplementary documents were analyzed by Artto, Ahola, and Vartiainen (2016) to verify organizations, names, places, and dates after collecting data through interviews. Pacho (2015) suggested that reviewing

publicly attainable documents could expand the understanding of the research problem and assist in the analysis and triangulation processes. Researchers using the qualitative methodology frequently access organizational reports and other company documents that are available publicly as supplemental data sources. Document review involved assessing existing documents, securing access to the documents identified through my assessment, ensuring confidentiality, compiling specific documents that were relevant to evaluation, and understanding how and why the documents were produced. Although public records and documents often provide useful information, outside sources must be corroborated for accuracy and may be biased because of political and personal agendas. Sometimes the common practices by business organizations to have hidden agendas may not subscribe to the full transparency of public documents and records (Pacho, 2015). Consequently, the probability of faulty analysis could be the result if data is inaccurately evaluated (Patton, 2015). This data collection technique has a few shortcomings, such as biased selectivity, issues retrieving relevant documents, access, and reporting bias (Yin, 2018). However, an advantage indicated that the documentation was stable and specific.

**Face to Face Interviews**

Face to face interviews allowed for better observation of the participant's facial expressions and body language and gave more clarity to in-depth data collection (Min, 2017). The absence of face to face interaction may have given the appearance of a less formal conversation that could seem anonymous and deny access to qualified participants (Min, 2017). A face to face interview is common in qualitative research and is considered

a dyadic relationship (Au, 2019) involving the sharing of thoughts, ideas, behaviors, and dislikes. The following steps could help a researcher collect firsthand data and capture a participant's point of view of the world through face to face interviewing: (a) preparation of detailed open-ended and penetrating questions. (b) use of an interview protocol. (c) selecting a relaxed and comfortable environment that is free of distractions to conduct interviews. (d) developing trust among each participant, and (e) creating a rapport with participants. Giving the interviewee assurances of confidentiality and that contribution is important may help researchers uncover rich, deep insight and learn information that they may have missed otherwise. The advantage of a semistructured interview is the potential enablement of structure by the presence of the interviewer (McIntosh & Morse, 2015). A few disadvantages of a face to face interview during the data collection process include the failure to give information that is pertinent to the question in the interview responses (Patton, 2015). Some reputable researchers have also expressed their concerns that the interviews may have potential inconsistencies and biases, time-consuming (Martinus & Hedgcock, 2015), and can also change over time based on circumstances (Oates, 2015). Researchers claim that identifying, recruiting, and scheduling interviews along with costs and travel time involved in getting to and from meeting locations of respondents are all disadvantages (Quartiroli, Knight, Etzel, & Monaghan, 2017). None-the-less, personal one on one interviews are known to be the most effective methods of data collection, a method fully endorsed by numerous empirical studies.

**Transcript Review**

Transcript review obtained participants' involvement in a process that engaged a review of the interview transcript (Thomas, 2016). The participant's answers, along with questions posed by the researcher, were reviewed to maximize the study's credibility and reliability. A transcript review is a technique that shares the interview transcript with the participant and provides an opportunity for revision of answers. The review allowed the participants to confirm the researcher's interpretations (Thomas, 2016) and correctness. The participants were given access to the interview transcript to edit, make the necessary corrections, and to reconstruct narratives in the document as presented by the researcher. Member checking techniques also help to confirm the accuracy of information once data collection is completed (Naidu & Prose, 2018). According to Oltmann (2016), engaging interviewees to comment, omit, edit, clarify, evaluate or confirm the finding's accuracy, and if necessary, offer other pertinent contextual information is critical for clarifying their responses, the accuracy of findings, and data saturation. A transcript review is used by researchers during the data collection process to ensure trustworthiness, accuracy, and rigor of the data collected (Birt et al., 2016). Reassurances given to participants during the transcript review process ascertained that they might exert some level of control over the collected data (Lancaster, 2017; Petrova, Dewing, & Camilleri, 2016). Appreciation for participants' effort, time, and invaluable contribution will take precedence by delivery of a summary of the research study findings to them after publication.

## Data Organization Technique

Completion of the interview process permits the researcher to transcribe all the recorded electronic data using organizational techniques focused on assigning generic codes for audio recordings, Journals, and participants. Anonymity was identified by Lancaster (2017) as a core ethical principle of the research study and is a mechanism used by researchers to maintain confidentiality and privacy. To implement standards of anonymity, I used unique pseudonyms to tag the information which participants provided as a substitute for their names. For example, I interviewed 12 participants in two Eastern Caribbean countries: Grenada and St. Vincent and the Grenadines. A participant named Gill Brown from the Island of St. Vincent and the Grenadines received a pseudonym such as ECSGB01. All data provided by Gill Brown were tagged with the same pseudonym to provide a fictitious name that represented the participant and the data in a manner that concealed their identity. The assignment of pseudonyms to researchers' notes, names of participants, electronic mail, Journal entries, and audio recordings were organizational techniques that I used to protect every data byte, hide all participant's identities, and provide confidentiality (Egbe, 2015).

A reflective journal gives easy access to high-quality notes and knowledge that could be shared instantly. A journal was my main resource for note-taking that may have served as an outlet for my thinking and helped keep track of my experiences throughout the research in an organized way. The practice of using a journal for research notetaking is discussed by Ibrahim and Edgley (2015) as a tool that professionals and researchers use

to indicate how they think while in action. NVivo software helped to organize the data in a way that allowed a better understanding. The interview protocol in Appendix A kept a record of information relating to the participant's organization, name, location, time, and date by assigning pseudonyms. Audio recordings were valuable for confirming responses given by participants and stored in a fireproof safe along with documents, written notes, and electronic data saved on an external USB drive storage device (Aleixandre-Benavent, Infer, Alonso-Arroyo, Peset, & Ferrer, 2020).

Storage in the cloud, computers, tablets, and cell phones are advanced hi-tech technologies endorsed by Moylan, Derr, and Lindhorst (2015) to collect and organize interview data. A Samsung Note 9 smartphone was the primary recording device that I used for interviewing participants. A secondary recording backup device available for my use to interview participants included my Samsung Galaxy Tab A (tablet). I attached a WorldForum 3.5 mm 360° stereo conference microphone capable of omnidirectional digital recording of all interviews. This external microphone will also be great for video conferencing, teleconferencing, Zoom, Skype, VoIP calls with the capability to daisy chain. I followed Yin (2016) five-step procedure for decoding and categorizing themes, tracking the collection of data, and keeping it organized. All research data collected for this process was backed up to an external/USB drive, and will be secured for five years, then destroyed at the end of that period to protect participants' rights.

## Data Analysis Technique

Data analysis in qualitative research involves the tedious exercise of synthesizing the data collected from interviews and ensuring the convergence of all data by identifying emerging themes to provide an accurate interpretation of the opinions and experiences of all participants. The perspectives of participants are better understood when using a case study design (Gammelgaard, 2017). However, triangulation adds depth to the collected data (Fusch, P., Fusch, G., & Ness, 2018), and I used methodological triangulation as my approach to analyzing the data collected to achieve greater reliability and validity. Joslin and Muller (2016b) referred to two types of methodological triangulation, the between-method and within-method; the key feature is the use of multiple methods by researchers to provide answers to the research question. Moreover, the within-method triangulation is widely understood and involves multiple sources of data found within a single design. This approach was ideal for my research since the two primary sources of data I engaged with involved document reviews and interviews. The data analysis process I used was the thematic analysis, which was poised to compare raw data from semistructured interviews of 12 experienced IT professionals and project managers within the business sectors and governments of two Eastern Caribbean countries. Also, supplemental data accumulated from data interpretation, transcript review files, and review of organizational documents collected from partner organizations and their trusted websites.

The use of proven data analysis techniques such as triangulation (Goodell, Stage, & Cooke, 2016; Natow, 2019) is the stimulant to achieving validity and legitimacy. Four

levels of triangulation were provided by Morse (2015a): data source, investigator, theory, and method. Many different groups and types of people are enmeshed in data source triangulation. However, data source triangulation focuses more on collecting data from more than one source of data in a single methodology to guarantee a complete perspective (Moon, 2019). The investigator triangulation uses the same data to divulge different perspectives in the same study and retains multiple researchers. The control of individual bias is a major advantage in collecting and analyzing data in the research process of investigator triangulation that employs more than one researcher. Theory triangulation guides the implementation of the research study, interpretation of the data, and research design (Moon, 2019). The theory triangulation option uses more than one theory, where several theories and perspectives analyze a single set of data (Patton, 2015). Method triangulation uses multiple methods for collecting data. Methodological triangulation matched the type of qualitative multiple case research that I am pursuing. Since no other researcher or group will be part of my study, the investigator's method of triangulation was ruled out. My research study did not seek to use different sources in a single method or more than one theory to provide contrasting views; as such, both data source and theory triangulation processes were inappropriate. Using a methodological triangulation was the best option for my qualitative multi-case study that collected data by interviewing qualified candidates, document review of organizational and publicly available documents.

During the analysis of data, corroboration of the findings is a major strength that injects rigor, validity, and credibility into the research design for a more enriched case study and saturation (Fusch & Ness, 2015; Yin, 2016). The process of qualitative data analysis involves tedious work (Weinbaum & Onwuegbuzie, 2016), and in the course of analyzing data collected by scheduling interviews with qualified participants, my goal to explore divergence or convergence of agreement amid compiled interview data evolved. I used document review and interviewing participants as primary sources of data in this research but remained attuned to data triangulation during the process of analysis.

Data were collected from multiple participants within two Caribbean countries by scheduled semistructured interviews while requesting organizational operational records, implementation policy documents, and other pertinent data from other sources, including publicly available documents. A follow-up meeting with participants was arranged to validate interview data for completeness and correctness, and a copy of the transcript sent to participants via e-mail for their review. I called each participant by phone and received their authorization to proceed; the data were imported into NVivo (version 12) to start the analysis process. I used NVivo 12 for importing data from Microsoft Word and notepad to keep the data organized automatically. NVivo 12 software can organize raw data by loading transcripts, coding data, and identifying themes. NVivo qualitative data analysis software was a much better match for this research study over ATLAS.ti and MAXQDA because of Walden University's online NVivo tutorial and the known disadvantages of the other two choices. NVivo has a proven successful track record and used in ICT and

cloud computing studies by Hussain, Fatima, Saeed, Raza, and Shahzad (2017); Bauer and Bellamy (2017) and Hachicha and Mezghani (2018). Houghton, Murphy, Shaw, and Casey (2015) advised of the growing demand for multiple sources of data for systematic handling and organization in qualitative case study research approach. Analyzing textual source data typically involves four phases: discovering themes, developing a few main themes from the batch, creating a hierarchy of themes, and allowing the integration of themes into the research's conceptual framework. Some related practices summarized by Morse (2015a) included comprehending, synthesizing, theorizing, and the process of re-contextualizing.

Identification and categorization of themes may be facilitated by the transcription of interviews with participants (Yin, 2018), in an effort that will identify patterns and themes revealed in the data about IT project managers' strategies used to implement IT frameworks designed to guide Caribbean ICT integration. Upon the participants' review and validation of the transcribed audio recordings of their interviews together with the documents obtained from their organizations, an analysis soon ensued. I then engaged thematic analysis, classified as a popular qualitative descriptive design that is known for its reputable, systematic, and transparent techniques used in the process of transcribing interview texts and when analyzing the textual data to interpret themes (Castleberry, & Nolen, 2018; Erlingsson, & Brysiewicz, 2017). The thematic analysis involved getting familiar with the data collected, generating initial codes, searching for themes, reviewing themes, and defining and naming those themes. I used the thematic analysis to transform

the data collected into an interpretable written format by the use of vivid and compelling extract examples relating to themes, research questions, and the literature. I intended to convince everyone reading my findings of the merit and validity of the analysis and went beyond merely describing the themes. I have provided supportive empirical evidence that addressed the research question.

The most impactful coding permeates a greater understanding when the thematic analysis is adopted; the techniques allow for the identification of patterns to code themes and subthemes. Three approaches to content analysis are syntactic, lexical analysis, and thematic analysis (Oliveira, Bitencourt, Santos, & Teixeira, 2016). Themes were the central focus complemented by the frequency of codes used relative to constructs within the TAM. The thematic approach correlated the key themes of my content analysis with more contemporary studies and TAM. After the importation of interview transcriptions captured on my Samsung Note 9 smartphone to NVivo 12 for analysis, together with pdf and Microsoft Word files, I emulated Yin (2018) proposed five-step interview protocol in the following order; (a) compiling, (b) disassembling, (c) reassembling, (d) interpreting, and (e) concluding.

**Compiling**

Compiling and sorting transcripts, organization documents, and publicly available documents amassed from data collection began the tedious tasks of the data analysis process. I created order from previously selected documents that accrued separately from multiple sources that were part of the first phase of an interview protocol — compiling —

the finished product considered a database (Yin, 2016). I organized the data collected into a few data files making it easily searchable with the ability to identify important concepts among and within cases. I then saved the transcribed interview recordings as a Microsoft Word document then import it into NVivo 12 for further grouping, coding, and analysis with the intent of identifying themes. Researchers can use NVivo 12 to sort, query, code, examine, and properly organize imported documents and data to identify relationships and patterns among groups of data and the emergence of themes.

**Disassembling**

Disassembling breaks down the compiled data into smaller fragments, a process that may involve assigning new labels or codes to fragmented data. Replicating the disassembling procedures tested codes in the process of trial and error that accounted for a two-way interaction or arrow between the first and second phases (compiling and disassembling; Yin, 2016). The ability to execute manual searches in the Microsoft Word documents to discover keywords in the transcripts was critical for recognizing general codes and concepts, then highlighting them as potentially important to materializing themes. The NVivo 12 software application has enhanced navigation features that gave me quick access to the data imported. Although NVivo 12 provides excellent assistance to qualitative researchers throughout various phases of the analysis, nothing can replace the thoughtful and intuitive requirement endowed in the human elements of analysts (Zamawe, 2015). Some context may be added to the research question from the outcome of grouping and matching discretely coded categories (Yazan, 2015).

**Reassembling**

Reassembling is the third step in data analysis and confirms data interpretations, whereby major themes emerged that embody critical answers to the research question (Yazan, 2015). Yin (2016) stated that substantive themes or codes or clusters of codes follow the disassembling phase. The graphical depiction of data or other tabular forms, such as arraying them in lists, facilitates recombination and rearrangement. Codes and categories mapped to each concept were put into context with each other to establish themes and endured further divisions into subthemes. Repeating of assembling and disassembling phases in alteration fashion suggests a two-way arrow, and the ability to identify themes in the data allows the researcher to decide whether more data regarding the study is necessary (Marshall & Rossman, 2016). Interpreting the data followed the process of reassembling.

**Interpreting**

Interpreting the data in phase four of the analysis is dependent on how well the researcher understands the data, and I was committed to obtaining a comprehensive understanding of the data that I analyzed. Data interpretation meant first making sense of the data collected, then applying my best judgement and understanding of its meaning. Yin (2016) explained that the researcher must put his/her meaning to the data by creating a new narrative to the reassembled material and portraying the data's relevance with graphics and tables as the key analytic measurement of the manuscript; this phase frequently interprets the reassembled data. The researcher's desires to create a new

database, or to reassemble the data differently, or to completely disassemble the data, are all sequences derived from the two-way and one-way arrow resulting from the initial interpretations (Yin, 2016).

**Concluding**

Concluding is the final phase of data analysis that gives credence to a sequence of statements specifically developed to observe the study's findings based on a broader set of perspectives (Yin, 2016). Rich documented data and analysis is required (Holter et al., 2019) to help the researcher justify the findings by a show of evidence. Besides using interview data, I supplemented my findings with other data from secondary sources. The findings of a qualitative research study strive to generate a more simplified understanding of complexities and sophisticated ideas interwoven within patterns and themes derived from answers to the research question and demystified by the researcher.

**Document Review**

Another means of understanding the processes which guide IT implementation strategies by IT project managers involve the reviewing of documents. I requested all pertinent documents from interviewees and organizations that they were legally able to release for my review. E.g., training plans, strategy documents, ICT implementation policy, IT solution design blueprints of architecture and infrastructure, and performance management documents. Gaining access to as many documents as possible of this nature allowed me to conduct a systematic review of organizational documentation. Performing content analysis may imply identifying core elements, recurring themes, and patterns that

IT project managers use to implement IT frameworks designed to guide ICT integration. Qualitative case study researchers should combine and transcribe all data sources related to the case (Stewart, Gapp, & Harwood, 2017). I transcribed all the audio-recordings and documents accumulated through primary and secondary sources. Ray (2017) noted that implementing triangulation is a method that could expedite data saturation. Similarly, other qualitative researchers confirmed the advantages of data analysis with the use of methodological triangulation. They incorporated face to face interviews, secondary data such as web searchers, journal summaries, publicly available documents, technical reports, and broad observations that are valid and useful in confirming, complementing, or disconfirming research perspectives (Booth, 2016; Visser, Bleijenbergh, Benschop, Van Riel, & Bloem, 2016).

## Reliability and Validity

The absence or minimization of bias within consistent measurements of a research finding induces confidence to achieve reliability (Dikko, 2016). Reliability will transpire when the research conditions that resulted in the same data for the finding required every participant to answer the same list of questions at different points in time (Dikko, 2016). Reliability is comparable to dependability and increases with the provision of a wealth of experience, a thick description, and in-depth details of data to understand a phenomenon. Both reliability and validity are collaborative concepts that ensured trustworthiness and rigor in the research finding (Morse, 2015a). These key concepts also corresponded to the credibility and objectivity of the study (Frankfort et al., 2015). Objectivity can improve

uniformity; a critical element needed throughout the entirety of a qualitative research study (Kelly, Fitzsimons, & Baker, 2016).

Validity measures the extent to which the data gathered accurately reflected the study's findings (Noble & Smith, 2015). On the other hand, instruments of measurement that characterized validity represented items that rendered concepts of the research study operational (Zamanzadeh et al., 2015). Although characteristics of validity are absent in measures, design, and samples, they are assumed to inform valid conclusions. According to Castleberry and Nolen (2018), Erlingsson and Brysiewicz (2017), Leung (2015), recognizing themes and patterns in words that are relatable is essential to qualitative research once richness and dimensionality in the data remained free from compromise.

A holistic approach may address validity and generalizability in the qualitative case study analysis. Walby, Marshall, and Rossman (2015) recommended replacing reliability and validity with the following: dependability, credibility, and transferability, the concepts of consistency, applicability, confirmability, and truth value. This proposal is consistent with the recommendation by Noble and Smith (2015) for use in qualitative studies as equivalent evaluation concepts. The use of several different vital techniques suggested by various qualitative researchers would help establish study credibility and realize validity in practice to address legitimacy threats in a research study (Kornbluh, 2015; Leung, 2015). Three core concepts are at the heart of these recommendations: triangulation (Natow, 2019), transcript review (Birt et al., 2016), and data saturation (Fusch & Ness, 2015). The original trustworthiness framework consists of four elements,

including dependability, credibility, transferability, and confirmability. The following are a few techniques used in qualitative research to measure reliability and validity (Macduff, Stephen, & Taylor, 2016).

**Dependability**

High-quality research acquires foundational trustworthiness from the type of data collected and analyzed. The findings of a research study may prove to be dependable if they are consistent and can be repeated to determine whether the research conclusion can be achieved (Amankwaa, 2016). The process a researcher uses to address the research question must be suitable and consistent with the proposed methodology to establish dependability. However, a well-documented and repeatable process could be the crux of concluding the research. Process logs or audit trails are activities that may help provide documentation for proving dependability (Connelly, 2016). Detailed reports of the choices made and the steps taken in this research may capture methods, processes, and consistency. Crowe, Inder, and Porter (2015) suggested that collection processes, decision processes, and analysis processes provide ample opportunity to document an audit trail that is pivotal in substantiating dependability in qualitative studies. I will document the above sequence of events in the data collection and analysis processes.

**Credibility**

Credibility in qualitative research reflects the truthfulness of the findings due to the quality of data collected and indicates believability in the holistic approach that represents the explored phenomenon (Amukugo, Jooste, & Van, 2015). Techniques used

to evaluate how believable the findings of a study may be after participants' data is interpreted prove its credibility (Savage & McIntosh, 2016). Silverman (2016) added that demonstrated trustworthiness, researching believability, and believability of the findings confer credibility. Triangulation in research study rather than a single approach provides an avenue for a more factual finding. I used a transcript review and methodological triangulation in this research study. Transcript review allowed participants to check the preliminary findings and interpretations to ensure that the meaning of what they reported in the interview was accurate; thus, assuring credibility. This feedback from participants served to clarify misstatements or make necessary changes before the contents are analyzed and gave them a chance to add to the study's credibility. Credibility and validity help the researcher to improve a case study through the execution of methodological triangulation (Yin, 2018). Qualitative researchers use methodological triangulation by conducting interviews, analyzing public records, analyzing documents offered by organizations, and data accrued from other corroborative sources.

**Transferability**

Transferability describes whether the experiences and perception of a particular intervention within a specific population or setting will correspond with the observed level of experiences and perception (effectiveness) observed in an organized review (Munthe-Kaas, Nokleby, & Nguyen, 2019). Along these lines, the expectation for policy decisions and guidelines depends primarily on a systematic review of research evidence. Although many review authors may agree that the usefulness and relevance of systematic

reviews for decision-makers are important, few established methods support review authors' assessment of transferability when reviewing findings to the context of interest in the review (Munthe-Kaas et al., 2019).

Several strategies have been endorsed by Morse (2015b) to help a researcher certifying validity. They include prolonged engagement, persistent observation, and rich, thick descriptions; debriefing or peer review; negative case analysis; researcher bias clarification; external audits, and triangulation. The capability of the findings in a study to be applied to another study is known as transferability. Still, it must be verified by the researcher via a detailed, rich description and transparent analysis of the data (Connelly, 2016). In other words, the degree by which findings are relevant or applicable in different contexts or beyond the current study denotes transferability (Hjelm, Holst, Willman, Bohman, & Kristensson, 2015). Fusch, P., Fusch, G., and Ness (2017) noted that proving external validity in qualitative research is expedited by transferability. My research will achieve transferability by seeking to explore in-depth, extensive details and descriptions that are colorful and rich in meaning during observations, interviews, conversations, and when collecting data in all general areas. Comprehensiveness and completeness will not be placed second to efficiency and expediency (Lewis, 2015). Transferability is an area of research that must be addressed by a researcher, with direct implications for future research and potential for the application of those findings and recommendations in practice (Noble & Smith, 2015). The more scrutiny placed on examining nuances in the information collected, the greater potential exists for applying that data to similar cases,

populations, or settings. Transferability is extremely important and relevant in this case study, but generalizability may be questionable.

**Confirmability**

Researchers' bias brought into a case study research can impact all areas of the study (Noble & Smith, 2015). None the less, confirmability is influenced by participants involved and does not originate from biases, motivations, or self-interests of a researcher (McNeil et al., 2015). Providing accountability for the experiences, perspectives, and philosophical position of the researcher are likened to the concept of confirmability. Thus, using a reflective journal during the research process can help address issues related to confirmability and avoid researcher bias. Qualitative research findings that have been confirmed or corroborated by others are tantamount to confirmability (Yin, 2018). I used a journal to take detailed notes throughout this research and deep probing interviews to ensure validity, reliability, and confirmability.

**Data Saturation**

To obtain data saturation in this research study, I interviewed participants by developing open-ended and semistructured questions, selected qualified participants, and conduct in-depth interviews by using deep probing and penetrating questions. I continued to interview selected participants until no other information or themes emerged from their experiences that would provide answers to the research question (Nelson, 2017). Data saturation happened when I was confident that obtaining all participants' information was complete, and no new data was possible; the census then came to an end. Since I used the

census sampling technique in this research, saturation occurred when the extraction of all possible data from participants was exhausted. Census sampling was the most appropriate choice for this study.

According to Aldiabat and Navenec (2018), qualitative research data improves in quality as the data continue to be collected and analyzed by researchers until reaching saturation. However, Varpio et al. (2017) conceded, resources are wasted by researchers who tend to collect more data than necessary after saturation, which prevents rich and deep data analysis on the topic researched. The saturation of data occurs when no new information is obtainable, replication of the study is secured, and it is not practical to continue coding. Methodological triangulation and transcript review are two data analysis techniques that I used to ensure trustworthiness and verify no new themes, coding, or information further materialized. Fusch et al. (2018) recommended using triangulation because it enhanced the research findings' reliability. I approached data saturation by using multiple cases, along with a properly developed interview protocol, transcript review process, and methodological triangulation to analyze the data. These elements contributed to complete data saturation after 10 scheduled interviews. Never-the-less, I continued to interview all 12 selected participants based on the requirements for census sampling. Thus, validating saturation of the data collected (Birt et al., 2016; Marshall & Rossman, 2016), confirming research credibility and assuring that the findings of my study are reliable.

## Transition and Summary

The purpose of this qualitative multiple case study was to explore the strategies used by IT project managers to implement IT frameworks designed to guide Caribbean ICT integration. Section 2 began by restating the purpose statement, followed by details regarding my role as the researcher and primary data collection instrument related to the ethical standards declared by the Belmont Report. Other details included information about participants, the research design and methods, population and sampling, the process involved in data collection, analysis of the data collected, and techniques used for the collection of high-quality data, reliability, and validation. Section 3 will encompass a presentation of the findings, application to professional practice and implications for social change, recommendations for further research, final reflections of the process endured throughout the research process, and a conclusion.

I used NVivo version 12 to organize and analyze the data collected by interviews with participants, publicly available documents, pertinent documents retrieved from participants and organizations, journal notes, and data from corroborative sources. The validity and reliability of the data I proposed to collect from participants and various other sources was discussed thoroughly in this section. I have adhered to every technique, method, and strategy elaborated therein to provide adequate privacy and security for participants and the information they contributed voluntarily to the successful completion of this research study.

Section 3: Application to Professional Practice and Implications for Change

## Introduction

The purpose of this qualitative multi-case study was to explore the strategies used by IT project managers to implement IT frameworks designed to guide Caribbean ICT integration. Upon receiving IRB Approval # 10-31-19-0553260 notification via email on 11/18/2019, I recruited 12 experienced and eligible participants originating from two countries in the Eastern Caribbean, St. Vincent and the Grenadines (EC1) and Grenada (EC2), to participate in face to face semi-structured interviews. These interviews allowed me to gain more comprehensive insights into participants' experiences and behaviors, thereby permitting a better understanding of the phenomenon I investigated. From December 3, 2019, to December 27, 2019, I conducted face to face interviews with 12 project managers/coordinators in EC1 and EC2. The task seemed very overwhelming at first because a few of the professional project managers whose contact information I received from my organizational partners were traveling abroad. I persisted in making the necessary connections with participants via telephone and texts and soon scheduled the first interviews. I acquired all signatures and needed cooperation of each project manager /coordinator on the informed consent form. Most of the forms were signed in person and a few returned by email before beginning each interview. Following each interview, I used the online software from Simon Says, Inc. to transcribe all digital audio recordings word for word, including each open-ended question and responses given to every probing question, while identifying each participant with a unique codename.

**Overview of the Study**

An online application aided the interview transcriptions. I followed up manually to ascertain the accuracy of each transcription by comparing the audio that accompanied each completed transcription with the wording or verbiage of the transcript and made the necessary edits to the transcript to match. Once I felt satisfied that the transcript and taped audio corresponded word for word, I deleted the transcript timelines to show a clean copy of the interview transcript that included only the questions I asked and the responses of the participant. I then scheduled follow-up interviews with each participant for their review. Next, I emailed a copy of the interview transcript to each participant and received a reply with an edited version from them with corrections. I discussed all edits made to the transcripts via telephone with participants. I identified each participant by using their codename (see Table 2). Transcript review completion occurred on January 8th, 2020. Most participants gave me their assurances over the phone that the edits they made to the final transcript were satisfactory. A few participants approved of the transcript as it was presented to them for review, assuring confidence of its correctness. After confirming the accuracy of each interview transcript by participants through engagement of the transcript review process, I reassured each participant that I will deliver the summarized version of the research findings to them as soon as it was published. I then imported the data saved originally as Microsoft Word documents into NVivo 12 Pro software to be coded and analyzed. Following is a list of coded participants who contributed to interviews for this research and coded documents from partner organizations and web sites for analysis.

Table 2

*Participants*

| Interview date | Participant | Gender | Codename | Country |
|---|---|---|---|---|
| 12042019 | Participant 1 | M | ECSWG01 - P1 | EC1 |
| 12052019 | Participant 2 | F | ECSDN02 - P2 | EC1 |
| 12132019 | Participant 3 | M | ECGJD03 - P3 | EC2 |
| 12132019 | Participant 4 | M | ECGKD04 - P4 | EC2 |
| 12132018 | Participant 5 | M | ECGDN05 - P5 | EC2 |
| 12162019 | Participant 6 | M | ECGLT06 - P6 | EC2 |
| 12182019 | Participant 7 | M | ECGAG07 - P7 | EC2 |
| 12182019 | Participant 8 | M | ECGMG08 - P8 | EC2 |
| 12182019 | Participant 9 | M | ECGGG09 - P9 | EC2 |
| 12192019 | Participant 10 | M | ECGDM10 - P10 | EC2 |
| 12252019 | Participant 11 | M | ECGIC11 - P11 | EC2 |
| 12272019 | Participant 12 | M | ECGWW12 - P12 | EC2 |

Table 3

*Documents*

| Documents | Codename |
|---|---|
| Electronic Document and Records Management System (EDRMS) Project for St. Vincent and the Grenadines | DOA/B |
| Intelligent Bus Management and Monitoring System Project for St. Vincent and the Grenadines | DOC/D |
| Environmental and Social Impact Assessment (ESIA) for the Caribbean Regional Communications Infrastructure Program (CARCIP). April 2019 | DOE |
| St. Vincent and the Grenadines National Economic and Social Development Plan 2013-2025 | DOF |
| Grenada Information Society Country Profile | DWH |
| Grenada Information and Communication Technology | DWI |
| Document of the World Bank - Project Appraisal Document | DWJ |
| Caribbean Regional Communications Infrastructure Program (CARCIP) - St. Vincent and the Grenadines. Project Implementation Manual Final | DWK |
| St. Vincent and the Grenadines – Ministry of Telecommunications. National Information and Communications | DWL |

## Presentation of the Findings

The central research question that guided this study was the following: *What strategies do IT project managers use to implement IT deployment frameworks designed to guide Caribbean ICT integration?* After receiving authorization from the IRB to contact participants, I recruited 12 project managers/coordinators and scheduled semi-structured face to face interviews with them for data collection in two Eastern Caribbean countries: EC1 and EC2. Following each interview, I transcribed each one with an online software application, manually checked the accuracy of each transcript, then conducted transcript review with each participant. The importation of all files, along with other reviewed documents into NVivo 12 qualitative data analysis software application, took place after authorization by the participants. The categorization of each imported file fell into five primary nodes and 30 secondary nodes.

The use of methodological triangulation and thematic analysis assisted mostly in comparing themes that emerged in the data. While participants gave varying accounts of experiences and their knowledge, many factors attributed to the disproportionate rate of failure and limited success stories about project implementation and ICT integration, project managers were dutiful, forthcoming, and explicit. The data revealed three primary themes paramount to the study, including (a) management of organizational structure. (b) implementing a government wide area network to facilitate the innovations of an ICT-enabled services industry, business, and education, and (c) ICT integration budget, buy-in, and challenges.

**Theme 1: Management of Organizational Structure**

Unanimity by most participants assured indications that proper management of organizational structure along with clear policies would enable a digital transformation process of adopting e-government (P1; P2; P3; P4; P6; P9; P10; P11). P1 and P11 noted that successful implementation of e-government is dependent on a strategic direction and cohesion to facilitate adoption and implementation (P1; P11). In general, the absence of a comprehensive strategic plan that is structured will create deviance to the apparatus and cohesion of project implementation. Ineffective organizational strategy, communication policy, and coordination are some common inhibitors met by project managers. P1 said that "strategic management should be front and center of determining how to apply best practices to an environment for successful integration" pertaining to ICT.

Although framing a comprehensive national ICT policy is essential, projects are already assigned for building a national infrastructure (DWH). From EC2's perspective, information and communication technology at the center of economic development will coerce a dynamic industry sector that would effectively spin-off the development of other sectors of the economy (DWI). Thus, supporting public sector reform programs that are beneficial to robust improvements to government agencies' efficiency and coordination (DWH). On the other hand, EC1 sought to enhance the telecommunication infrastructure to enable similar development of their ICTs and to enable reliable connectivity with EC2 through subsea fiber optics cable routed to government offices, schools, and the general public (DOE).

Several challenges confront the Organization of Eastern Caribbean States (OECS) that has prompted the investigation of new sources of growth and measures to minimize their vulnerability due to a more competitive global environment (DWJ). As developing countries, changes in the external markets, severe shifts in trade, and exposure to natural disasters like hurricanes over the last two decades have created conditions of high debt ratios and inherent fiscal imbalances in the sub-region (DWJ). The decisions made by OECS countries to find alternate methods for securing a sustainable external position to reduce poverty rates and high unemployment, and to reinvigorate sustainable economic growth, are key reasons to focus on comprehensive public sector reform strategies to deliver improved public sector services (Rana, Hoque, & Jacobs, 2019). The use of ICT to inspire regional integration is a mechanism for transparent government, improvements to workloads, and internal efficiencies, as well as lower costs to public services delivery (DWJ; Waddington et al., 2019).

E-government is the use of ICTs over the Internet to improve the responsiveness, efficiencies, innovations, and processes in public organizations (Choi & Chandler, 2020). E-government implementation creates a catalyst for organizational change and innovation that helps to facilitate better teamwork, remuneration, enhanced knowledge management practices, and flexible arrangements for working (Afshari, 2020). The critical information divulged by P11 focused on EC2 government's approach to implementation, detailed the use of ICT to the fullest, for maximizing the benefits that may have derived not just from technology, but from how the technology can align best with internal plans. The strategy

includes supporting the internal arrangement of the government in holistic thinking, the whole of government approach. The recognition of limited resources, and opportunities for innovation and organizational change throughout government, ensures that the full use of existing platforms, knowledge, or process will avoid waste and improve the speed and efficiency of development and deployment of services to every member of the public (P11). The ICT platform induces a collaborative ambiance among people in government ministries and harmonizes methods of conducting business. Helping to goad motivation and synergize agencies to work together towards the delivery of services to citizens may awaken a collaborative endeavor on a single pathway towards the developing maturity of ICT in EC1 and EC2 (P11). The sentiment of collaboration was endorsed by P6, whose vigorous defense denoted that as an agency with responsibility to implement measures to regulate telecommunication, general practice ensures representation of everyone, and the most important strategy for success is being open-minded, thoughtful, and collaborative. These project management (PM) tools are used in development, whether implementing a project or developing policy.

The vision projected by members of the government that connect the initiatives of e-government reform objectives helps to promote inter-ministerial coordination, ensuring fairness and balance, and helping to stay the course over several years. P1 and P11 jointly determined that a high-level, organized management structure for coordinating activities central to ICT and decision-making process on the cabinet-level for review and approval functions were the most appropriate approaches. A consensus made certain that the basic

operating standards were in place due to previous security concerns. Also, other security standards exacted establishing processes that checked all the necessary boxes during IT implementation within all ministries and agencies (P11). The Ministry of ICT will be the standard-bearer for policy guidance within the whole of government approach, where everyone can work together to create the energy, synergy, and environment which filters directives throughout government and the country (P11). The strategic planning for EC2 envisioned a centralized policy for ICT and decentralization of implementation that may advance the best rewards. The Ministry of ICT should be the central body responsible for everything ICT (P11). Also, all work silos of ICT and project implementation units in the various ministries of government must be under the Ministry of ICT as the central agency for implementation. This goal would allow a seamless implementation by designating the final review and approval of ICT-related decisions, the sole responsibility of the Ministry of ICT. P1 illustrated the conceptual ICT integration management hierarchy for EC1 as the creation of a steering committee made up of all the stakeholders that are necessary for the initial stages of the project implementation process to maintain a continuous presence and to have as many meetings as possible.

P1 continued to defend a rationale for an organizational process. Because ICT is cross-cutting across government, a suggestion is the appointment of a sub-committee of cabinet ministers to address all ICT matters (P1). Implementation of this idea may not be ideal in every instance, but under the ministerial level, a broad-based steering committee that addresses policy issues related to TELCOM and ICT has the authority to determine

the handling of matters related to cybersecurity. P1 said, “establishing a process for high-level decision-making will improve the way government functions.” Under this hierarchy creation of another technical committee would seat the chief of IT person as chair. The intricate coordination of activities and people within various branches of government and ICT divisions by the technical committee in synchronization with the steering committee provides necessary collaboration and guidance to the project implementation framework. The ICT steering committee could meet quarterly, the technical committee could meet monthly, and subcommittees or sub-teams working on specific items or tasks may meet weekly to track tasks related to ICT project implementation (P1). These activities would ensure that everyone has a complete interpretation of all the processes involved, clarity about each task, and a comprehensive understanding of the overall objective. There may be instances whereby the representatives of stakeholders are present, but they are not the authority figures capable of making decisions. Hence, as a project manager, the need to set up management meetings to communicate directly with persons in authority becomes a critical task. This scenario warrants that the steering committee, which comprises of all stakeholders at the level of division heads, delegated with such decision-making authority (P1).

The management structure prescribed by P1 for administering the national-level ICT objectives of EC1 simulated an established regional IT steering committee delegated with the responsibility to deliver efficient and prompt project implementation and provide the necessary policy guidance (DWK; P1). The committee facilitated the coordination of

all project activities, reviewed project development progress, and advised on matters related to project implementation obstacles and their removal. The committee accepted responsibility for providing comments on particular reviews and reports, in addition to receiving and reviewing the status reports on components' implementation in projects (DWK; P1; P11). An aspect of the steering committee's role was to review, recommend, and approve applications that met the requirements' threshold for training and business incubator grants.

In the case of implementing EC1 ICT projects under the international cooperation and development fund (TiwanICDF), P2 provided a valid representation of the process. A project note was sent with a request for a project to the Taiwanese Embassy. The project identification assessment was done by Taiwanese consultants who then met stakeholders to verify the need for the new system proposed. Next, a feasibility study was conducted to determine the requirements for making implementation possible and if they exist or need to be provided by the government of EC1. Following this study, an agreement was signed with the government to start the project. At this juncture, a follow-up consultation was scheduled where stakeholders assessed the development of a system's requirements document and system planning, based on the type of document developed. After the final hurdles of implementation and testing, official hand-over took place, and then a support period was contracted for the project. A service level agreement (SLA) defined the level of service expected from the Taiwanese government.

**IT management strategies concerning TAM**. An organized, structured process for managing information systems in this current era of globalization is pivotal to success when running the day to day activities of government and business organizations. Global flow has emerged as a critical need for organizational activities with the ability to become exponentially more challenging to execute in the absence of professional management of reliable information systems (Harryanto et al., 2019). The findings of the research aim to explain users' acceptance of an expertly managed, organized structure with the potential to fulfill the objectives of management, staff, and employees' responsibilities. The model used for new technology acceptance was TAM.

The conceptual relevance of three variables used by TAM: PEOU, PU, and AT asserts that the actual behavior of individuals to use new technology is determined by the intention to perform that behavior. Davis (1989) further confirmed perceived usage to be acceptable based on the degree that a person believes in the user-friendliness of a system. Since the integration of ICTs and development of e-government systems are intertwined, they are inherently dependent on the coherent and professional management of structures within an organization by a trained workforce. Workers' thorough understanding of the implementation processes of ICT is depicted in the findings of this research as critical to the acceptance and successful deployment of IT systems. P1 and P11's examination of a few different organizational structures to manage e-government activities and employees denote the real conceptual importance of interconnectivity and inter-ministerial efforts to collaborate. PU, PEOU, and the user-friendliness of new IT systems were established in

Theme1 as being inextricably linked to the management of trained personnel in executing daily workloads within an organized structure. Participants also indicated that behavioral intentions to exhibit the necessary responsibilities, to be current and knowledgeable about tasks by having frequent meetings are significant issues in project implementation. Singh, Grover, Kar, and Llavarasan (2020) referred to personal interaction involving the public, inter and intra-governmental back-office processes and relations dictated by development of e-government systems when administering organizational structures. Communication strategies may help IT project managers and committee members to remain relevant and cohesive when managing implementations in a structured organizational environment.

Mensah (2019) integrated the TAM to research the capacity of e-government and the performance impact on adoption of e-government services and found that significant determinants of PU in e-government services were factors in government performance and capacity. Similarly, this study showed that the capacity of government had positive influences on e-government performance. Furthermore, the evidence was overwhelming in determining that an essential predictor of intention to recommend adoption of services by e-government originated from the PU of e-government. For operations management to successfully engage complexities embodying the use of various platforms, performance, and capacity objectives of multiple IT resources, the proper organizational structure must be built. Although an absolute range of these technological systems and benefits has not yet been acceded, fully understood, or realized in developing countries (Dwivedi, Sahu,

Rana, Singh, & Chandwani, 2016). The real capacity of government hinges on its ability and agencies to formulate and apply rigorous policies.

TAM interlocks with various cyber physical systems (CPSs), which describes the 4th industrial revolution's (industry 4.0) rapid advancements in digitization, automation, and smart technologies facilitating interconnections between different subjects, hardware, software, and humans (Molino, Cortese, & Ghisllieri, 2020). While enhancements to ICT strategies craft structural management of the critical infrastructure for e-commerce that supports an end to end e-banking and financial services through internet and electronic networks (Sepasgozar, Ramzani, Ebrahimzadeh, Sargolzae, & Sepasgozar, 2019). These innovative technologies are primarily dependent on the alignment of practical conceptual frameworks like TAM and its variables PU, PEOU, and perceived attitude towards use (PATU). The Reliance upon successful delivery of e-services hinges on the high-speed broadband connection of a robust fiber optic backbone infrastructure.

Table 4

*Node Related to Emergent Theme 1: Management of Organizational Structure*

| Major Theme | Participants | | Documents | |
|---|---|---|---|---|
| | Count* | References** | Count | References |
| Management of Organizational Structure | 47 | 23 | 9 | 6 |
| Total | 47 | 23 | 9 | 6 |

*Note*. * = # of citations per node; ** = instances of coded files per node.

**Theme 2: Implementing a Government Wide Area Network to Facilitate the Innovations of an ICT-Enabled Services Industry, Business, and Education**

The Caribbean regional communication infrastructure project (CARCIP) is the national broadband project implemented through Public-Private Partnership with Digicel (OECS) Ltd and funded by the World Bank (DOE). A major development objective of the project involves providing the telecommunications infrastructure for greater access to regional broadband networks, consequently incentivizing regional economic development and growth. The implementing of an ICT-enabled services industry within the Caribbean region will comprise two main components of the project, the regional connectivity and the ICT business incubation component. P1 divulged that "the project implemented in St. Lucia, St. Vincent, and Grenada is basically a fiber-optic network; government wide area network (GWAN)" connecting St. Vincent to the rest of the Grenadines. Components of the basic infrastructure incorporated approximately 139.8 miles (225 km) of fiber optic cable laid on the seafloor. A primary trunk of this cable was installed between the islands of St. Vincent and the Grenadines and Grenada, with cable segments serving individual islands at different intervals (P1). Single armor cable (SA) was typically used in the deep water (DOE), while both SA and double armor (DA) cable types were installed in closer proximities to the shoreline.

This fiber network goes right around EC1. A festoon undersea network cable was installed because EC1 cannot be crossed in the north. Hence, the network cable was run undersea from one village to the other, between the Windward and Leeward sides of the

Island. The Grenadine Islands which were connected to the cabling are Bequia, Mustique, Canouan, and Union Island, then onto Carriacou and Grenada. The GWAN is comprised of 10Gb/sec line speed from the core to EC1 and EC2 distribution points, and from the distribution points to selected access sites comprised of government offices in those two countries. Line speed of 1Gb/sec to those offices also provides the capability of running several services. One of the services offered in the EC1 project is the new government IP PBX. The 'subsea cable project' that runs from EC1 to EC2 is open access and allocates a portion for the government's use (GWAN), the rest being open to providers of services within the Grenadines and the Caribbean, which allows residents and businesses access to services. Once access to the fiber cable is authorized to different service providers, the competition will ensue (DOE, P1). DWK gave the next milestone in the process cogency. In conjunction with component one of the CARCIP agenda, strengthening the legal framework and regulatory environment will harmonize the regional level to provide end-users with effective regulation and benefits that include the sharing of infrastructure and open non-discriminatory access to IXP and network infrastructure (DWK).

While the rudimentary of an infrastructure backbone between EC1 and EC2 was established by P1 and corroborated by P11, P12, DOE, DOJ, and DWK, management of distribution sites in EC2 was depicted by P12. P12 intimated that a total of ten fiber optic distribution points for government fell under the auspices of the assistant commissioner of police. None the less, a total of 14 distribution sites were assigned for incoming fiber to be distributed back to the community end-users (P12). For example, assignment of law

enforcement locations as distribution points where the main fiber cable gets distributed to government entities in those locales or jurisdictions (schools, revenue offices, and other). P12 said, “under CARCIP, the government has taken ownership of four distribution sites that fell within the portfolio of government ministries.” Both the CARCIP and electronic government for regional integration project (EGRIP) endeavor to integrate government because of the need to collaborate with different government agencies and departments to optimize their work processes effectively and efficiently. Therefore, promoting suitable conditions for enhanced productivity in the workplace and the environment as a whole. Meantime, “high-speed fiber connections were implemented to all government buildings, for the ministry of education and schools” (P4).

**Social context**. DOE provided supportive social context linked to the population of these two countries. According to the United Nations World Population Prospects, an estimation of the current population of St. Vincent and the Grenadines is approximately 110, 940 with population density stabilized to approximately 285 individuals per square kilometer and growth rate of 0.32% as of 2020. Grenada’s population is estimated to be 112,523 people, with a yearly change rate of 0.53%. The population density continues to increase as of 2020, with approximately 331 individuals per square kilometer (857 people per square mile). Over the past ten years, Grenada’s population pyramid seems to suggest a stabilizing population growth due to relative level numbers of younger-aged individuals (< 20 years) that might be offset by immigration (DOE). A majority of citizens in both nations live on the coast with island distributions along the lowlands. The topography and

limited amount of ideal development lands in EC1 and EC2 have resulted in mixed land use concentrated near the ports and coasts. Some settlements extend inland in a linear land use pattern on flatlands.

Long-term strategies for the development of St. Vincent and the Grenadines were outlined in a government plan covering the period 2013-2025 for its emphasis on national economic and social development goals (DOF). The vision for bettering the quality of life for the citizens of the country is contingent on a few over-arching accomplishments such as improved and sustained economic growth, reduced poverty levels and unemployment, development of the physical infrastructure, human and social development, enhancement to security, advanced workforce based on technology, a cultural renaissance, and regional integration. The plan seeks to make amendments to previous shortcomings by advancing strategies to promote and achieve sustained economic growth. Capitalizing on prospects to improve technical and administrative capacity, if pursued rigorously, could result in comprehensive, sustainable, and longstanding development (DOE). Like other Caribbean countries, St. Vincent and the grenadines face monumental challenges that demand bold, purposeful, and well-ordered planning and execution. St. Vincent and the Grenadines are comprised of the mainland, St. Vincent, and an island chain that includes 32 islands and cays, the Grenadines, with seven islands inhabited: Bequia, Mustique, Canouan, Union Island, Mayreau, Palm Island, and Petit St. Vincent.

Grenada’s plan for ICT is at the center of the country’s economic development as a dynamic industry sector in itself (DWI) and pitches to springboard the development of

other sectors of the economy. A new era of e-commerce has spurred many businesses in developing countries and the world at large, realizing rapid growth and increased net profitability. The provision of high-speed internet connections furnishes access to online services that may realize advantages to online banking by allowing customers to conduct their banking and business transactions from home. Government business services could facilitate the online payment and verification of taxes, utility bill payment and tracking, online ordering, accounting, and billing, advertising, and shopping online (DWI). Many more business opportunities are available for mobile communication technologies with far-reaching impact on e-commerce initiatives. Effective control and regulation of issues related to licensing for qualification to own ICT enterprises offer a secure foundation to build upon investments made in the sector. A healthy measure of technology competition has already begun to induce cost reductions for ICT services. As business-to-business and business-to-government transactions like procurement methods and funds transfer operate at enhanced capacities internationally and locally, demand for internet access has soared (DWI). As Caribbean countries enhance the business environment driven by ICT-fueled modernization of the public sector (DWJ), promotion of transparency, efficiency, and the quality of public services delivery could take advantage of economies of scale through the delivery of regionally integrated e-government applications.

The focus of utilizing technology in the Caribbean is central to building front-end visibility with citizens, and in so doing, create a superior experience for individuals. This project is possible by enabling back-end technology to complete electronic information

requests or service (DWL). The appropriate IT governance frameworks must be in place to continuously monitor and manage end to end quality of the infrastructure. Application of coherent and consistent risk management policies must be applied in all areas to cover every class of risk, explicitly addressing issues related to IT governance requirements and compliance (DWL). The following are a few implementations in EC1 and EC2.

**Subtheme: Digi4R.** Digi4R is a synonym for the 'digital for resilience' program. P8 clarified that the intention of government's response to a digital transformation agenda in EC2 enveloped Digi4R. The government of EC2 realized that incorporating ICT would be critical to development in this era. The Digi4R project mainly entailed the digitization of government operations, starting with government registries, and transforming internal workings of government from paper-based to a digital format. The paper records will not be entirely removed, but most of the operations will be done through digital functions or digital systems. The connection of all government offices, buildings, and sites is closer to fruition with the implementation of this vital project (P8).

**Subtheme: EDRMS application and other PKI applications.** The electronic document and records management systems (EDRMS) are implemented in EC1 and the Grenadines and is one of the most important PKI applications adopted in governments worldwide. The project was meant to be proactive in preventing the traditional account passwords from being hacked, to prevent confidential information from being intercepted and tampered with, and to prevent individuals and agencies from denying the documents that are authored/handled. Public key infrastructure (PKI) is needed to strengthen the

security of all the systems. Other PKI applications include e-tax filing system, e-motor vehicle service, land information service, and e-procurement services, etc. (DOC; DOD).

**Subtheme: EGRIP.** The electronic government for regional integration project **(**EGRIP) considered the installation of vertical and horizontal applications. All horizontal applications dealt with two issues: enabling a precise legal framework for e-government – providing various pieces of legislation for electronic transactions, etc., and conducting an evaluation of the institutional framework support for e-government. P1 elaborated that to achieve the best success nationally demanded managerial harmony. Vertical applications encompassed a multi-purpose ID and pharmaceutical e-procurement applications for the Organization of Eastern Caribbean States (OECS) pharmaceutical service. Another issue involved delivery of an e-tax application for the inland revenue department. However, essential lessons learned entailed realizing the importance of analyzing the readiness of countries to move from an eight-hour online service to a 24/7 presence (P1).

**Subtheme: Intelligent bus management and monitoring system project.** The vision of this project predicts a safe environment for passengers and minimize the waiting time for buses. This project was a collaboration of the government of St. Vincent and the Grenadines (EC1) and Taiwan. The use of GPS and system analysis by residents assists busses of EC1 to provide better services. The busses arrival time may be monitored by the use of an app, giving passengers an advantage when scheduling trips. Using CCTV cameras to help monitor bus stops ensures the safety of all passengers. Intelligent video surveillance systems provide improved public safety services and management of urban

safety. The transportation management and ICT division of the government of Taiwan, in conjunction with the government of EC1, introduced public transportation management, advanced mass transportation services (APTS). The project included the advanced traffic management services (ATMs) and various technologies to create a more user-friendly and convenient transportation system for the traveling public of EC1, thus, resulting in improved quality of life for individuals (DOA; DOB). Additional benefits to passengers include improved public safety and more efficient service. Following are a few examples:

(a) Intelligent: 3G/4G mobile network with GPS allows busses to be more intelligent. Location data, speed, and tracking (monitoring) of busses are uploaded to a traffic control center and properly managed.

(b) Internet: The smart bus stop or mobile application may be used by passengers to determine the location of a bus and its estimated time of arrival.

(c) Infrastructure: The cutting-edge technology behind the system is IoT (Internet of Things) and cloud technology. 24/7 service is provided, 30 days of video storage, and back up to ensure a robust service (DOA; DOB).

(d) Security: The surveillance system in the selected safe zone provides a safe waiting time while waiting for the bus. The EC1 police are passengers' guardians.

**Subtheme: Law enforcement (CariSecure).** P12 indicated that in the area of crime, the automated fingerprint identification system (AFIS) is part of his responsibility in EC2. Beyond that exists the Canadian Bank Note (CBN) border management system. The AFIS system is connected to about twelve Caribbean countries and deals mainly with

fingerprinting when someone is processed after they are believed to have committed a crime (P12). A procedure exists whereby regardless of whether the person involved is a citizen, the system will hit against other systems within the Caribbean to determine if that person's fingerprint is in another database. These systems are connected through the ISP via a VPN. Further clarification given by P12 indicated that under normal circumstances, information (statistic) is accumulated and disbursed on a weekly, monthly, or even yearly basis. Case studies conducted by USAID and UNDP concluded that if such information is received daily, in real-time, it will help to strategize better, develop policies, and respond to incidents with more urgency and immediacy. For example, a specified housebreaking incident and stealing may occur in an area of the country. However, when statistics are analyzed daily, the data may provide a more accurate indication of multiple incidences during the same period on that day (P12).

The strategies and policies that may be developed from the daily analysis of data would help answer questions like: are additional resources, or officers, or more vehicles needed? Is there a need for increased patrols? How would this give the person responsible for that area the ability to mitigate incidents? The intention is to progress beyond incident management to case management involving persecutors, magistrates, and judges, which then moves to prison management, meaning that if an incident is reported and turns out to be a crime, it goes through all processes until that person goes to prison. Eventually, a file is created on that individual in prison. The record will indicate the amount of sentence the person will serve. Additionally, the duration of the person’s sentence will incorporate all

that transpired relating to the person in his or her document. The name of this new project roll-out is Carisecure and involves twelve Caribbean countries (P12).

The development of strategies involves thorough brainstorming of how ICT fits into the strategic plan based on what is expected in the first six months of the year (P12). A strategy may not be ideal for ICT alone due to the EC2 framework for law enforcement being set by the overall priorities of the government in determining what is required and the potential to achieve it (P12). If ensuring that safer and less porous borders in terms of criminals entering the country are concerns, an evaluation would be done on how ICT can be integrated into those plans.

**Scenario:** An individual x from Trinidad went to Europe and became a member of ISIS. The policy as per EC2 is that once it becomes knowledgeable that individual x is a member of ISIS, individual x would be prevented from entering EC2 borders by being placed on the watch list as it relates to our border management system. In this case, the strategy is lined up with our policy to ensure that individual x, who is a member of ISIS, does not become a bigger problem at a future point. Because a structured plan is required every year, there is a responsibility to provide scrutiny of the strategic plans and evaluate the effectiveness, regardless of the form of IT/ICT implemented, to determine how it may be integrated into the policy (P12). Ensuring buy-in by the teams and assurances that they work in unison with each other along with departments to ensure goals are met is critical to regional security and personal safety.

**Attitude towards IT implementation**. Having an authentic IT mindset plays a huge role in the public sector development of lesser developed countries (LDCs) and the yearning for the adoption of information technology (IT). The characteristics and traits of individuals holding key positions as primary decision-makers often favor the influences on adoption of decision-making processes in organizations (Imran & Gregor, 2019). That being acknowledged, an individual's knowledge, principle, and attitude are obsequious to the decision-making process. Still, the level of awareness or abilities of IT professionals directly influences the relationship of an IT mindset to explore the use of IT within the workplace and its components. Empirical data support the findings indicating that an IT mindset can be conceptualized as comprising IT beliefs and personal innovativeness with IT. Additionally, exploration of the IT mindset concept and its effects and antecedents in LDCs might hinge on a comprehensive understanding of the barriers presented to IT/ICT adoption within public sectors of LDCs (Imran & Gregor, 2019). The social implications realized from the furtherance of research study in the area of IT mindset in the adoption of IT/ICTs in LDCs suggest the potential for greater transparency, along with improved productivity and efficiency. P3; P5; P9, and P10 have recounted experiences with various essential IT implementation initiatives being severely impacted by failure due primarily to the lack of effective service delivery. However, a plurality of the participants in this research also gave their time, effort, and knowledge as professionals to important projects that generated more efficiency and success in the workplace, making it much easier for individuals to embrace technology.

**Policy-driven initiatives building educational and business institutions.** The overall success of e-government initiatives and processes are mainly dependent upon the government's role to ensure a proper legal framework to operate. P3 acknowledged that a policy document makes it compulsory for persons to discover how to navigate the digital field and dictates what should occur. The ICT in education policy and the acceptable use policy of EC2 are two important documents that provide guidance, influencing the proper and responsible utilization of devices and technology by students. Also, determining how devices should benefit students in schools within the social media spaces. The foundation of both policy documents stands on the education Act, legislation that has been around for a very long time (P3). The combination of these three documents formed the basis for ICT integration within primary and secondary schools in EC2. Conversely, policies that guided the CARCIP and MESH projects, which embarked upon creating a wireless mesh network meant to provide wireless internet access to all classrooms and laboratories of all schools in EC2, are still in the draft stages. Once approval of legislation for e-government concludes, the adoption of these projects might go forward. Meanwhile, content filtering, delivery, and distribution, promoting a safer browsing experience for users, are managed from a centralized location. P4 hinted that creating a national ICT strategy combined with the ICT in education policy and the acceptable use policy in schools, together with buy-in from the public, may present untold advantages to integrating ICT strategies in every area of IT implementation (P4).

The integration of e-testing via ICT implementation throughout the schools ensure that all students are well-prepared for life in this new era where everything is technology driven (P3). The inclusion of every single Caribbean examination council (cxc) subject makes completing the infrastructure paramount. The focus must be placed on the building of labs and allocating more lab space, even if it involved relocating some labs to different rooms and doing capacity building with teachers (P3). A prolonged effort targeted getting teachers to understand that it is not just about a device, but how the usage of devices may supplement the curriculum to benefit students. Using strategies to integrate ICT is not just about showing a video, but how to craft and produce a product that would make sense to a child while not creating a distraction. Although implementation of this concept occurs on both primary and secondary educational levels, project scope and deliverables acquire validity because of the established CARCIP and MESH programs (P3). For example, an e-book initiative needs to run on a framework or foundation provided by CARCIP and MESH (wireless network), the network connectivity and distribution of that connectivity is already completed. As it relates to policy, finalizing stakeholder's consultation might guide how managing all student's devices will proceed. Having a plan within the unit is a temporary substitute for an official documented policy until a national strategy has been affected (P3).

**E-testing (electronic testing).** The measure of success within the school system in EC2 involves a grade-based structure; a child passes, or a child does not pass (fail). P3 explained that the IT unit within the ministry of education has investigated beyond those

circumstances. An example of how IT observers interpreted success portrayed the ability of a student delegation to represent EC2 at the robotics competition. Two straight years of students meeting a benchmark for achieving success without having to pass a robotics examination by the Caribbean examination council (cxc) because an exam does not exist. These skill sets are outside of the regular school curriculum and represent success. This process indicates that individuals were being educated not merely to pass an exam but to get things done. The MESH and CARCIP projects measured success by looking at usage of devices (smartphones); were individuals using it? Students needed to start using their device before an IT observer could have identified and accounted for the device's usage. Some limitations presented cases where students had no device to use. To gauge success, devices received network access to be able to monitor usage, with the results indicating that the students were more tech-savvy and better digital citizens despite a few challenges (P3). More students needed to be involved to better understand the usage of ICT as a tool and its importance for students' survivability within the education landscape.

Uncertainty about the success of e-testing in secondary schools cxc exams still loomed because the program had only just begun. Nonetheless, based on the recorded performances of online subjects, a reason to be optimistic was forecasted. Because of different cohorts of students every year, it was difficult to determine whether the grades of students were better when accomplished on the computer vs. the possibility of merely having a smarter batch of kids. The data gathered during the two years since installing the program indicated similar results, yet it allowed IT observers leeway for analysis in an

attempt to make some sense of it regarding the influence of e-testing. Because two years of e-testing data were now available, IT observers could look back to the period before implementing the program to compare conditions before e-testing (P3). A three and five years look back at Caribbean history was conducted to find answers to what was the state of performance then, compared to the two years of e-testing. During the third year of e-testing, an observation by the IT team recorded that when students used their personal computers to take exams, the performances were higher than when they used paper-based modality.

Teachers voiced their concerns because of their understanding that the duration of an examination should be an hour and fifteen minutes (multiple-choice part). Although students completed the exam in under 40 minutes, their grades were much better; what was happening? The realization occurred that with the paper-based exam, four steps were involved when answering each question: reading the question, finding the corresponding number on the answer sheet, shading the correct answer, then verifying the correctness of the answers. If there was a doubt, the student must return to the question. Whereas, when completed online, the questions were presented in a single view together with the options, allowing students to quickly move back and forth as they desired (P3).

P3 confirmed that the IT team recognized two important issues were at play, (a) the students felt more comfortable using a computer, and (b) the approach taken toward presenting the e-test questions. These two areas of observations accounted for significant improvement made after three years. However, analyzing more data will provide needed

verification that could lead to determining whether there is something about the e-testing, which resulted in this generation of students performing better. Naturally, when grades go up, more curriculum officers and teachers alike would motion to have their subjects done online, and this reflects another challenge identified; limitations as to which subject can be listed as ready for online due to inadequate infrastructure (P3).

**Enhancements to strategies**. Communication with the business is necessary for the future in terms of the building of a particular infrastructure plan. P10 explained that some essential areas brainstormed included determining what the infrastructure should look like, what the backbone of the infrastructure should incorporate, will interconnected remote locations be required, or would they be predominantly on-premise? How would campus subnetting be planned for growth? Determining how to best engage IP addressing and security designs. Achieving these objectives would give way to the consideration of redundancy, layered security, and scalability issues. Layer two connectivity must allow consideration for all applications and data: for example, what type of data? (video, voice, and/or text), then a discussion of the appropriate routing and switching protocols that are best suited. The population of students and their concentration was also a factor because some areas were denser than others. Considering layer seven in terms of the category of applications that would deliver content across the enterprise meant building upon a sound foundation. An inadequately built foundation could lead to abrupt failure of secure end to end (source to endpoints) transfer of data. Good results will follow if all endpoints meet correctly integrated and secured implementation guidelines. Thus, understanding the user

community well, and its growth projections are the keys to formulating sound strategies and a successful plan. The cloud is a viable option for the future as current technology trends in the direction to decentralize the data center. However, a comprehensive plan is necessary to ensure the successful delivery and security of applications (P10).

P10 expressed that strategy development at the university level involved planning for cloud migration and being ready to think outside of the box. According to Gholami, Daneshgar, Beydoun, and Rabhi (2017), an assessment and detailed planning towards the concept of cloud transitioning might shape prioritization. An inadequate understanding of processes and unpreparedness would contribute to failures establishing the organizational goals necessary for migrating to the cloud computing platform. P10 articulated a nuanced strategy. Evaluation of what needs hosting on-premises vs. what will require assignment to the cloud must be thorough. A budget and technical resources (human capacity) should accompany those projections based on the size of the enterprise. Utilizing the 80-20 rule may help to determine whether 80% of the onsite population needs to be hosted on-prem, with the next 20% designated to the cloud (P10). However, the availability of SaaS, IaaS, and PaaS cloud applications and the decentralization of data centers has the potential to make this rule obsolete. From a policy perspective, recognizing that change has occurred or that change is necessary must first be acknowledged when addressing integration and the use of ICTs to affect organizational and social change. Creating a trajectory for what exactly ICT development in education or business could accomplish and ways to harness it might require a re-evaluation of the ICT curriculum within all schools (P6) and aligning

business goals with IT objectives. Setting policies in motion to shape or direct intellectual capacity development has the potential for meaningful advancements in every breadth of society.

The strategies proposed by the IT project manager, team, and leaders must include meticulous preparation and planning. Fahmideh and Beydoun (2018) advised that before any action could occur, a proper understanding of the risks and requirements is expected mainly because the process of cloud computing transformation might not be hazard-free. While placing due focus on ICT frameworks and policies is vital, the Caribbean territory also needs to become more committed to realizing the forces that are at play. P10 warned that the severe nature of the sociotechnical problems that exist and what it might take to address it professionally could not circumvent using effective and efficient ICT policy development in a format geared for the local context. P10 further stressed that whether the subject discussed is about the implementation of an IT project or policy framework development, collaboration and flexible thinking will always be an IT project manager's first and last principles (P10; P6).

**Business.** As a regulatory agency, a strategy of the national telecommunication regulatory commission (NTRC) is clearly defining the scope in the first instance. P6 supported the notion that entering a negotiation with the understanding that flexibility would be necessary to achieving success due to being resource-constrained may be an advantageous skill. In terms of a strategy to get around that problem, dependency on a

collaborative effort to get frameworks, policies, and projects implemented may serve a commendable purpose (P6).

P5 responded to statutory issues regarding the national insurance scheme (NIS) on the business side of matters concerning technology. The main task of the organization is to pay benefits; therefore, all enhancements may focus on the impact on improvements to efficiencies of collecting data to pay benefits in ways that provide more accuracy and effectiveness when paying benefits. This effort is the focal point of broader guidelines for the implementation of all technology and MIS systems that are put in place (P5). There are also cost implications or liabilities and cash flow statements throughout the year. IT solutions are a major part of the equation that helps the business organization update the hardware and software to remain relevant. The network inventory includes a combination of AS400, Dell servers/PCs, hardware, and firewall, cost-effective solutions compatible with the infrastructure and architecture requirements. P5 said, "as a statutory body that is considered a government entity, the IT department of NIS indulges in improvements to project implementation to help create better opportunities for collaborating with business professionals for better management of all aspects of people's lives." Having an excellent management structure may enable more competitive pricing with vendors (P5).

**Case classification summary**. Analyzing attributes of the 'person' (participants) case classification and the nuances of its similarities and differences prompted two areas of query that asked: do different organization types place a different emphasis on certain themes? Secondly, which themes were different organizations aligned on, and which ones

were the concerns unique to the group? To answer the first question, the data collected in the interview process indicated near equal focus by both partner organizations on Theme 1 ‘management of organizational structure’ due to the importance placed on developing a construct based on professionalism and skills as the foundation for promoting the national strategic direction, and to legislate policy. EC1 indicated a management style based on the selection of a ‘steering committee’ as the central administrative body but having the support of technical subcommittees to coordinate IT project activities and initiatives in collaboration with the steering committee. The adoption of this high-end structure could assert influence on functional and operational differences due to EC1’s prioritization of the national strategic objective before modeling the next phase of a regional standardized formula. On the other hand, EC2 alluded to a cabinet-driven organizational structure in a whole of government approach. The focus on e-government by EC2 may enable a firm consolidation of crucial inter-ministerial coordination, promote balance and fairness, and facilitate administrative ICT activities at the highest levels of government. P11 said that “conducting tests to determine proper functionality is at the core of the management style that puts officers on the ground to validate and verify test results.” This style verifies that the correct procedures are followed, documentation is complete, and the output of project implementation is optimal. A professional attitude is necessary for successful outcomes.

Theme 2 ‘Implementing a government wide area network (GWAN) to facilitate innovations of an ICT-enabled services industry, business, and education’ exhibited plans in progress or completed by EC1 and EC2. Although there was more apparent alignment

between partner organizations than were differences within EC1's scope of deliverables for the CARCIP project, a more intricate project implementation process was established due to the connectivity of more points of distribution to different islands, as compared to EC2. Therefore, the planning and implementation phases demanded more comprehensive oversight. The data suggested that different emphasis was placed on multiple areas of the second theme by various organizations. The second question may also derive an answer from the latter preamble. The alignment of partner organizations bolstered both Themes 1 and 3 'ICT integration budget, buy-in, and challenges,' with a few distinct similarities in the implementation process of CARCIP in theme 2, and some differences in the scope of project deliverables. Similarities included: (a) a unified approach fulfilling the mandate of CARICOM. (b) a collaborative effort in the implementation of CARCIP. (c) the prologue of better opportunities to conduct online business and distance learning or e-learning. (d) integration of ICTs into all areas of primary and secondary education as a primary step to comprehensive national IT/ICT solutions. (e) determination to vastly improve standard of living conditions of all citizens by offering cost-effective government services such as electricity, faster and more reliable wireless internet connectivity, etc. (f) a semblance of strategic misdirection primarily in EC2, and lack of a project management methodology; critical components for successful integration. (g) moderate to high levels of unreadiness based on inefficient project management, risk management, change management policies/ procedures, and training, and (h) an inadequate implementation framework for integrating new technological innovations.

An organization's digital transformation process is evolutionary and takes every advantage of the benefits provided by the technology. Responsive adaption to conditions of change and implementation, and integration of people, processes, and software could help modify transformation and workloads regardless of size. Developing an integrated approach facilitates an easier decision-making process by acquiring a broader knowledge base. Integrating new systems and replacing software that delays work and performance with new applications that support new functionalities aid the development of central software architecture that can exchange data securely with its systems and software. The process enhances business performance when leveraging new technology.

Uniqueness in the concerns of EC2 participants occurred in theme 2's section on policy-driven initiatives building educational and business institutions. Involvement in the development and integration of ICT in education within EC1 took a separate track to EC2 by utilizing a different program for the delivery of their educational enhancements. Notably, enthusiasm for achieving the successful integration of ICT projects was equally at the highest levels across both partner organizations. The humane element of *attitude* adjoined the characteristics of participants to variables in dissecting nuances of the cases. As one of the few decisive factors that could dictate how participants feel about the case attributes, *attitude* emphasized differences between specific themes and variations in their unique alignment. Participants' attitude was a critical variable used in the evaluation of IT implementation and case classification, but mostly relevant to the conceptual theory of this qualitative multi-case research study, TAM.

**Strategies used to implement government wide area network concerning TAM.** Two critical constructs of the TAM that were used in the study to evaluate the implementation of technology in e-government, and if utilized appropriately, involved perception and attitude. The implementing of GWAN in the Caribbean duly assessed any individual's intentions to use it. A person's attitude towards the usage of new technology impacts their intentions to use that technology. The use of high-speed wireless connection provides opportunities that might empower people. It enhances their capabilities to direct business online, improves work experiences and performance, takes advantage of online education and other personal transactions offered by e-government services. Hence, the determination to adopt new technologies might occur due to individuals' intentions to use technology. PEOU indicates the degree of effortlessness that is allowed by technology. In contrast, PU allows for a range that the use of new technology improves the performance of an individual (Islam, & Mohammed, 2020). Ultimately, TAM was reinforced by the findings of this research due to the application of measured benchmarks for use, allowing IT project managers to implement a GWAN successfully.

The success of Caribbean IT project management efforts to implement broadband fiber optics and its application of new technology exploits in e-government could induce better living conditions for citizens. DWK said, effective regulation via sound legislation may allow end-users to access their shared infrastructure resources such as e-government services, e-commerce, e-health, and online learning institutions. DOA and DOB supplied illustrations of additional benefits to citizens by designing efficient public transportation

systems operated by the internet of things (IoT), with improved public safety. The TAM, paired with IS, when implemented by ICT's e-government initiatives, considered its core constructs of attitude, PEOU, and PU (Jung, 2019). The use of these variables helped the determination and improvement of Caribbean citizen's acceptance of new technology.

The triumph or failure of ICT/IT is contingent on the activation and intensity of people's interest to accept, support, and utilize services offered by ICT. Thus, strategies for early engagement of individuals to participate in feasibility studies and enduring gap analysis, etc., should have also stimulated the adrenaline to innovate and become active participants. The innovative spirit to set a leading pace for the development of Caribbean nations' infrastructure and IT initiatives by improving primary and secondary education as a first step has already realized dividends. However, P3 opined that "without policies, we are somewhat restricted in terms of what can be done because there is no legal leg to stand on." E-testing has shown positive results, but the use of online exams and the social media platform for early education summons the establishment of responsible guidelines, policies, and proper legislation. Shao (2019) disclosed that the evolution of contemporary technology might foster reform to education using online teaching and learning.

The delivery of e-government services, e-commerce, and e-learning initiatives in the Caribbean at high rates of success demands practical conceptual frameworks in sync with robust implementation strategies. The notion of a greater public awareness objective that reveals the structured implementation processes and challenges may invoke positive social recompense and solidarity amongst users, management, stakeholders, and citizens.

Table 5

*Node Related to Emergent Theme 2: Implementing a Government Wide Area Network to Facilitate the Innovations of an ICT-Enabled Services Industry, Business, and Education*

| Major Theme and Subthemes | Participants | | Documents | |
|---|---|---|---|---|
| | Count* | References** | Count | References |
| Implementing a Government Wide Area Network to Facilitate the Innovations of an ICT-Enabled Services Industry, Business, and Education. | 11 | 18 | 17 | 16 |
| Digi4R | 2 | 4 | - | - |
| EDRMS Application and Other PKI Applications. | - | - | 2 | 2 |
| EGRIP | 2 | 11 | - | - |
| Intelligent Bus Management and Monitoring System Project. | - | - | 4 | 2 |
| Law Enforcement | 9 | 8 | - | - |
| Additional Sections | 34 | 5 | 4 | 4 |
| Total | 58 | 46 | 27 | 24 |

*Note.* * = # of citations per node; ** = instances of coded files per node.

**Theme 3: ICT Integration Budget, Buy-in, and Challenges**

P5 stated that "having an IT budget is essential for allowing departments to have the flexibility they need to implement projects." It helps to expedite the approval process when project costs are constrained. Larson, J., and Larson, L. (2019) echoed that the best approach traditionally is project management attempts to make sure that the delivery of projects stays within a set scope, time, budget, and quality constraints. A healthy budget and collaborative processes are goals needed for larger projects conducted in the business arrangement. Each stakeholder should be required to generate a separate budget, compare and discuss them, and agree on the best overall solution for each project. The availability of funds for upfront evaluation and other investigative ground-work activities necessary to provide comparative cost analysis is beneficial to IT governance. While allocating an IT budget may be challenging for many businesses and how it functions, the flexibility needed to ensure proper operation from an IT perspective may be achieved (P5).

The early involvement of users in the implementation process of a project gives them a sense of owning the solution. Strategies involving managers and users, as well as junior staff in early identification and development of systems through every step in the process will create a positive attitude toward the feeling that they are part of the process (P2). Because users might see this effort as administering larger chunks of work to their responsibility, a motivational or better compensation incentive that stimulates interest to participate could be implemented as a strategy. "An assessment of employees is a suitable

method for rewarding workers in some form based on their level of accomplished work towards integrating ICT" (P2) and could be an excellent strategy for employee buy-in.

According to P7, "fear that computers and technology would replace the jobs of regular workers" has driven the resistance to change, particularly within older employees. As such, using a more direct hands-on and word of mouth approach has proven effective. Encouraging an environment of ease during a project implementation where users can become knowledgeable, understand the implementation process more intricately, and become involved, produced better results in users' acceptance of IT systems and their reliance upon it. Resistance to change is prevalent when implementing projects, and early buy-in from users as well as division managers and stakeholders is essential to success (P1). People soon realize that there is no immediate job threat, and the systems that are in place would help them to improve work output, generate more efficiency and success in the workplace (P7).

P5 noted that users should have the opportunities to spur their interest even if they know or understand very little about the technology. Empowering the IT staff to assist in brainstorming solutions that work along with the requirements of the users and providing guidance for the direction that those fixes should follow makes them feel accepted in the process. When this happens, IT staff tend to work harder because they reject failure, and users feel a sense of satisfaction in collaborating. Once this type of buy-in occurs, all else usually falls into place successfully. P9 emphasized that the engagement of stakeholders and people who resist the integration of technology in dialogue that illustrates the benefit

of the technology will get them to embrace it. A great suggestion offered by P2 is when writing the request for an ICT-based project, the involvement of a technical expert could help accommodate a better overview of the details, and the specific requirements for the project. An inclusive approach to assessing the needs directly linked to the cost of the project would emerge. Many projects fail due to the lack of a proper scope or definition that adequately breaks down the work to cover every aspect because of not consulting with an IT representative or the IT unit. Scheduling as many meetings as possible to stay up-to-date and retrieval of current information from end-users is critical to success. End-users' involvement as early as possible in the project implementation process is vital and will benefit the project outcome by mitigating many challenges.

**Finances.** A challenge implementing government projects is, most times they are donor-funded and developed from within, but by the time authorization of the funding is final, time would have elapsed (in some cases 2 years), and the circumstance may have changed during that period (P6; P7; P8; ). The environment could be very dynamic, and the original pricing of three million dollars that was established two years ago during the conception of the donor-funded project could balloon (P7; P5; P2). Due to the gestation period, P1 said, "the cost of the project may increase to five million dollars at the time of implementation." This situation could lead to inevitable shortfalls (P12) and an extended project where the scope and estimates would need modifying for greater accuracy (P7).

**People.** Because of the current culture in EC1 and EC2 public service, or due to government bureaucracy (P1), the project strategies to integrate people and groups within

projects like EGRIP must have the necessary legal framework for horizontal and vertical applications to communicate with each other (P3). The right person must be at the helm. Cultures, norms, and entrenched attitudes in the public service could lead to resistance to change (P8) and result in project delays that may sometimes warrant escalating or finding a different method to accomplish the objective. P3 and P8 opined that an existing cultural problem creates an impediment for workers to use the system effectively. The reality that initial penetration and network coverage is good, the inherent will to integrate ICT (P5) has great potential to transform the government's culture and resistance to change (P8).

**Technology.** Technology obstacles are rife and inconvenient within EC1 and EC2 project implementation. The need to modify off-the-shelf systems is a challenge that may warrant adequate skillset to build an application (P1; P6; P12) and the expertise to create a particular system. Frequently, the required budget needed to implement a project might be accessible to the project manager, and initially, the system served its intended purpose (P1; P12). None the less, like every system, factors of operation and future maintenance need financial considerations, and sometimes they are not deliberated. These issues could result in negative implications for future projects. The reluctance to provide maintenance for new technology was evident in P1's statement. P1 acknowledged that "inefficient use of skilled personnel across agencies and departments of government, the lack of version upgrades, and inadequate licensing management are a few other areas of concern that might become problematic and create a hindrance to success and productivity."

In education within EC2's ICT integration, P3 said that "teaching digital natives are about keeping students' attention and making the lessons valuable to them." Instead of teaching about volcanoes in the abstract, being able to bring digital simulation inside the classroom via video would enhance learning potential. This concept received strong resistance (P3). Although a process for training took place in several schools, acceptance for the implementation of strategies and techniques only took hold principally among the younger teachers. In comparison, a majority of the older teachers have not responded favorably to it. Generally, people are apprehensive about things they do not understand, especially in primary schools where older teachers are on the staff. This attitude was clear in the rollout of new technology. Alternatively, infrastructure challenges are prominent (P3). According to P3, during the construction period of most schools explicitly, the idea of IT technology and ICT were phenomena of the future. As such, the accommodation of computer labs was absent from the building plans. It is common to find a primary school with a population of four to six hundred students with a usable computer lab that can only accommodate 25 students at any one time. The desire of educators is for students to leave school with the ability to use a keyboard. The proper skills must be passed on to them to learn the dexterities of keyboarding (P3). This goal cannot be accomplished in most cases because the labs do not have adequate space and devices (smartphones) in schools, which posed a problem. The argument made is that although every student already has a device, how do you teach someone to type efficiently on a smartphone (P3)?

**Training.** Human resources may not have the prerequisite training capacity in a few instances and a limited training budget might be available; P2 provided an example. If the training of employees costs over six thousand dollars U.S., an application may be made to the cabinet in EC1 for the release of such funds, which could take quite a while. In a situation where the training program involves the selection of multiple employees, the cost will increase exponentially. For a security training program that costs over six thousand dollars U.S., an obstacle would be presented (P2; P7) that can jeopardize the adequate training of employees.

**Working in silos.** Conceiving the medium-term agenda (MTA) or three-year life cycle that aids the EC2 government in executing its timetable of plans outside of Project 2035 is the government's response to filling existing gaps. MTA makes sure that all the necessary people are involved in the implementation of an ongoing project by bringing stakeholders into the sphere and conducting more horizontal services (P8; P10). P5 and P6 noted that due to existing "silos," the government recognized that the execution of most projects happened without the full consultation of all stakeholders. The changes needed to enhance productivity led to the MTA.

Designing the MTA created improvements in the horizontal services, getting all necessary individuals involved. Implementing projects in silos created a disconnect. One unit might decide to get things done one way and another group decides to go in another direction with something as simple as acquiring equipment for a digital virtual meeting (P3). One team might decide to implement Logitech while another unit chooses to use the

Owl system. In some cases, due to this lack of coordination, compatibility issues arose. While persons in IT can work around those problems, results indicated a lack of cohesion and waste where spending should be optimized (P3).

**Subtheme: Overcoming ICT integration challenges**. P10's point of view was "having an opportunity for a front-row seat at the negotiation table when businesses plan their strategies, helps to gain an understanding of what a business is trying to accomplish, and to translate those into technical requirements." A chief technical officer (CTO) or a chief information officer (CIO) understanding of the business is important. They can, in turn, present an inclusive strategic plan that lines-up with the goals of the business. Once that happens, finding all the correct resources and the type of talent to be hired becomes easier. P10 further stated that "having a project management methodology was necessary when implementing any project." A PM methodology assures stakeholders' engagement, that the implementation processes align with business goals, vision, funding, project, and planning, and every action follows that PM methodology. These practical actions ensure minimization of scope creep, that projects remain on a tight budget, identification of each stakeholder, results are understood, and what the implementation efforts are attempting to solve for the business (P10). Most people would not buy-in to projects that do not have a vision. Thus, successful projects are common when buy-in by all management personnel, employees, principals, and teachers are prioritized for IT project implementation and ICT integration (P9; P4).

P10 pragmatized that as business organizations progress towards automation and cloud services, many displaced individuals will venture into new careers that may not be ICT-oriented. Regional segmentation may pose an existential threat to job stability and security. While every country has tariffs, policies, and laws, etc., the region seems to be unprepared to fully capture and absorb the actual benefits of the ICT agenda in a holistic way. Governments and leaders may be ill-equipped to fulfill mandates necessitated for advancing the ICT program. For example, broader project scope demanded for training potential technical personnel to implement IPv6 standards, to provide a thoughtful and meaningful understanding of the direction proposed for delivering a single ICT space. Knowledge of the installation and configuration of networks in that vein to interconnect businesses and institutions across the islands will open doors for job opportunities and improved social status in the job market. Such conditions and technology prerequisites are necessary for standardization of policies and best practices; thus, disengagement from workspaces absorbed by traditional silos that are a hindrance to the full adoption of ICTs.

Before implementing a new system, major consideration must embrace all the risk factors that may be inherited (P11). The development of a framework must reflect a risk management perspective and engaged during the planning stages. Inherently, PMs use of an ICT framework derives many benefits and adept at absorbing risk; they are applied by government agencies to determine performance baselines. Financial/project management frameworks give clear advantages to ICT for cost-benefit, economic, social justification, and sensitivity, utilized across all government agencies. Although other ICT frameworks

like COBIT and TOGAF are known, none are used in EC2 mainly because personnel are not in the state of maturity and readiness. Presently, EC2 is endeavoring to "map a course of direction and determine an approach to get there" (P11). The use of specific strategies has brought individuals to a level of awareness and created some semblance of structure. However, the capability maturity model (CMM) was adopted for IT security throughout the agency while at the same time assessing and developing skill sets. From a framework perspective, very little consistency is evident, and a loose implementation of ICT projects has become customary, mainly in the same way the government had been implementing any other project. Seemingly, there is no consultation with the project management body of knowledge (PMBOK) model approach to PM or other proven theoretical frameworks. An implementation methodology and comprehensive understanding of PM are necessary ingredients for overcoming the lack of professionalism and are required for successful IT project implementation (P11; P9).

**ICT integration challenges concerning TAM**. The integration of ICT in the Caribbean has encountered several challenges that directly impact the user's acceptance and application of information systems. Participants insisted that challenges to national development included resistance to change, lack of infrastructure, training, culture and technology obstacles, budgetary and financial issues. Although adoption of ICT would undoubtedly pioneer innovative transformations (Chen, Lin, & Wu, 2020) if adequately applied to e-government, e-commerce, and e-learning, the implementation of strategies faces considerable challenges. To achieve higher rates of successful project outcomes to

digitalization, investments in the adoption of appropriate conceptual and implementation frameworks, training of skilled workers, standardization of protocols and systems must take precedence. Achieving these preparatory objectives was substantiated by sentiments from P1, “lessons learned included realization of the importance to analyze the readiness of countries.” The use of TAM’s constructs to assess the adoption behaviors of ICT that involved PU, PEOU, and AT related to mitigating challenges to technology acceptance may play a critical role in integration.

ICT creates many opportunities for rural young entrepreneurs to start businesses. Then again, adoption challenges of ICT hinder the development of business initiatives from maturing into rural-economic drivers of job creation, innovation, and development. Research literature indicated an interest in validating TAM, that measures the volitional aspects of adopting ICT in the context of young entrepreneurs’ behavior in mainly rural communities (Zaremohzzabieh et al., 2016).

The concepts of theoretical fundamentals allow for a better understanding of the impacts to external variables that account for factors outside of the environment, while being able to appraise its influence on internal variables such as behavioral attitudes and perceptions (Hsieh, 2019). TAM’s relevance to e-testing challenges in the development of higher education, installation of fiber optics, and e-business objectives accentuated the importance of analyzing constructs of perception and attitude in the research. A student’s use of their smart device and social media platforms revealed obstacles due to inadequate infrastructure, training, culture, and technology contingent on an evaluation of usefulness,

ease of use, and the attitude of users. Branca et al. (2020) explained that applying digital technologies allowed the implementation of new processes. The findings concluded that ICT integration challenges were influenced by factors based on attitude of users to accept new technology, lack of adequate policies and guidelines to regulate process-driven ICT implementation strategies, and lack of a proven project management methodology. Buy-in from the entire team was critical to success, and P4 alluded to the fact that "effective guidance from the top is key to developing projects and strategies for implementation and integration of ICT." The commitment and support of an organization's top management is the central power of influence on its employees' behavior and is a critical aspect of the initiation and adoption processes of ICTs within the developing Caribbean diaspora and beyond (Kimani, 2017).

Table 6

*Node Related to Emergent Theme 3: ICT Integration Budget, Buy-in, and Challenges*

| Major Theme and Subtheme | Participants | | Documents | |
|---|---|---|---|---|
| | Count* | References** | Count | References |
| ICT Integration Budget, Buy-in, and Challenges. | 51 | 73 | 1 | 1 |
| Overcoming ICT Integration Challenges. | 10 | 31 | - | - |
| Total | 61 | 104 | 1 | 1 |

*Note.* * = # of citations per node; ** = instances of coded files per node.

## Applications to Professional Practice

To establish justification for the governments of developing Eastern Caribbean countries, business entities, and educational institutions to apply the research findings, I engaged the following process. Understand the extent of the application in their business by balancing the degree to which IT project manager's ability and resources (strategic fit) of the findings matched the problem of the research study. The alarming rate of project failure in the Caribbean and developing countries continue to plague IT implementation in the region. A trained, professional workforce is necessary to implement solutions.

Increasingly, today's businesses seem to operate in a world that has become more volatile, unreliable, and ambiguous (Schoemaker, Heaton, & Teece, 2018). Markedly, a dynamic environment faced by organization leaders and IT professionals (Mittal, 2019) requires catering to the evolving needs of customers (Moss, Good, Gozal, Kleinpell, & Sessler, 2016). Professional practice may obtain vital advantages from the findings of this research study because it contains strategies that were proven by IT project managers to be successful in similar contexts. IT project managers may utilize the strategies revealed in this study to circumvent pitfalls that are unique to this industry. A review of this study highlights the implementation of various real-world solutions to IT project management processes in the Caribbean and developing countries. Researched by many scholars and documented in this research study, successes in integration have great potential to benefit e-government, business organizations, educational institutions, and citizens in ongoing IT project development and implementation in the Caribbean region.

## Implications for Social Change

An amplification of ICTs' increasing dominance and importance by researchers (Jones, Liao, Wang, & Li, 2016; Jorgenson, & Vu, 2016) as a major economic growth and productivity driver has the potential to deliver improvements to all aspects of the Caribbean society such as government, businesses, educational institutions, individuals, cultures, and entire communities. Technology foresight and techno-centric development tools (Servaes & Hoyng, 2017), such as ICT, are critical in helping to shape social good through instrumental and intrinsic values by a process that engages different stakeholders. Foresight in technology has been widely adopted in diverse fields and may claim greater responsibility for positive changes within society than economic growth (Pietrobelli & Puppato, 2016). From a multi-dimensional perspective, the impact that technological innovation has on society is understudied. However, researchers acknowledged that IT capabilities call for discovering essential strategies for successful implementation.

Social change impacts ordinary people in various ways. The strategic managing of an organizational structure ensures the enforcement of a public service workforce that is skilled and engaged. The availability of e-government services and knowledge processes may be extended to every member of the public, including rural populations. New robust technology platforms for business, e-commerce, and e-learning opportunities might favor advantageous economic activities for all citizens. Similar pursuits may ignite an informed society equipped to interact and compete on the global stage. The effectiveness of IT/ICT project implementation and integration dictated recommendations made by the findings.

**Didactic Institutions: Learning and Teaching**

The teacher's role in society traditionally assumed the responsibility of the person possessing the knowledge and all the information and consigned to be the transmitter of such. Today, because of the incursion of technology, education is deemed sustenance for healthy personal improvement and the stimulus for socio-economic development. Pérez and Fernández (2018) explained that teachers in the digital age face more challenges than ever before as the job of a teacher has changed drastically, allowing university professors to become the producers and reproducers of knowledge. In the age of ICT development, teachers must transform from being transmitters of knowledge and information to loyal mediators of progress by using ICT (Pérez, & Fernández, 2018). Additionally, teachers must become transformer, coach, actor, adapter, philosopher, professionals, therapist, and analyst, that in combination with his/her duties as a teacher, be an active participant in the development of the learning-teaching process (Tébar, 2017).

Developing 21st-century skills using the tools of ICT and digital technologies now demand student's understanding (Schmid, & Petko, 2019) of digital technologies to learn and solve problems. The development of ICT has provided sufficient evidence that shows a change in traditional systems of teaching and learning established nearly three centuries ago. Amhag, Hellström, and Stigmar (2019) examined the use of digital tools by teachers and the need for digital competence in higher education in two Swedish universities. The analysis paid attention to competence, self-reported usage, and the need for digitization of training for teachers. The results suggested that teachers' use of digital tools went beyond

specific pedagogical purposes (Amhag et al., 2019). Generally, educational support for teachers helped in the development of digital teaching and assisted educators. Identifying areas in their teaching and learning context where supplemental pedagogical value made it easy to use digital tools created the difference. This action motivated effective, subject-oriented examples successfully presented by teachers with more experience (Amhag et al., 2019). Some new approaches to education include constructivist learning, distance learning, and lifelong education/learning, which forced changes to the paths taken by a teacher's role as a practitioner.

**Digital Transformation of Public Sector**

Digital capabilities and new skills are in high demand due to the advanced usage of ICTs in the workplace of many industries (Hidalgo, Gabaly, Alonso, & Urueña, 2020). Public sector ICT project implementations have a sizeable impact on society. None the less, challenges due to technological and organizational uncertainties and complexities are unavoidable. The project alliance method, known for its cooperative and collaborative project delivery, is a powerful tool used by IT project managers to abate such challenges. Lappi, Aaltonen, and Kujala (2019) explained that presently, ICT projects have not quite honed the use of the alliance model. IT Project implementation succumb to failure due to many types of complexities, including economic, organizational, or governance issues that are particularly challenging in the field of ICT, where fast-evolving methodologies and technologies play a crucial role. Additionally, regulatory and bureaucratic factors in ICT projects pose even more glitches (Lappi et al., 2019).

**Enhanced Business Functionality, Performance, and Competitiveness**

The methods used by organizations to conduct business is rapidly changing due to technological developments. The internet is fundamentally the chief actor creating these changes that have a considerable impact on doing business, particularly e-business, which helps improve the productivity and economic activities of companies. Aithal (2016) gave an endorsement to e-business as an explicit framework, from the standpoint of strategic objectives and business goals, for categorizing e-businesses. Activities that relate to the collection, storing, managing, and analyzing of data relevant to business functions and operations, known as business intelligence, is at the forefront of generating knowledge in business organizations that aid and support decision-making. Widjaja, Sumintapura, and Yani (2019), in their exploration of business innovation, organizational performance, and ICT, states that in this era, the competitive performance of businesses is a determinant of success. The performance of an organization is measured against vision and set mission, whereby the ability to achieve objectives and goals via optimum allocation of resources defines its organizational performance.

**Improvements to Communities and Cultures**

IT project managers within government and business organizations, researchers, scholars, business managers, IT professionals, and community leaders might utilize the findings of this study to achieve a more comprehensive understanding of strategies that may make a difference. This knowledge may assist when implementing IT deployment frameworks to integrate ICTs in the Caribbean. The findings will add to a knowledge

base of solutions for IT project implementation strategies. The global community may also find practical technological guidance to solutions that apply to their local context. The changes resulting from the use of this information might inspire positive attitudes towards accepting the implementation of strategies recorded and inspire social change.

Successful implementation of strategies has the potential to enhance international business competitiveness and performance while transforming the culture of business and government. E-government services like e-commerce, e-finance, e-education, healthcare, and other services delivered through high-speed networks and Wi-Fi technologies offer citizens a crucial advantage. These services imposed by ICT projects provide essential benefits to societies (Hodge, Carson, D., Carson, D. A., Newman, & Garret, 2017). The MESH and CARCIP projects that are the delivery mechanisms for high-speed wireless Internet networks may bring socio-cultural changes to individuals, communities, primary and secondary schools—at the same time positively impacting urban and rural hospitality centers and private practices. The findings of this study may benefit the delivery of online e-services by making the needed improvements to IT project implementation strategies.

**Improvements to Individuals**

Training is critical for developing core competencies in ICT for the preparation of a professional job market in the 21st century. ICT dominance and digital transformational technologies cut across almost every area of industry and academia on a global scale. As sociotechnical activity in the region ramps up, the preparation to compete internationally cannot be overstated. Economic sustainability and global competitiveness are dependent

on skilled human resources to develop reliable policies that will integrate seamlessly into public and private sector adaptations. A spotlight should illume enhancements to personal effectiveness, building academic value, up-sampling competencies in the workplace and job market, problem-solving and critical thinking, developing cognitive and interpersonal skills, entrepreneurial, creative, and innovative thinking. This portfolio of techniques to help survive modernity is an essential component required. Ultimately, having access to a high-speed internet connection in the interior of every island in the Caribbean may bring those types of opportunities home to each citizen, allowing them to meet personal goals.

## Recommendations for Action

The lack of strategies for implementing IT and integrating ICTs in the Caribbean, together with the absence of a strategic organizational direction, inadequate IT project management training, techniques, and accountability, have created preconditions for IT project failure to deliver effective results. Inherently high failure rates and the inability to fully satisfy the expectations of clients prompted clear recommendations for action in this research study as a consequence of the above deficiencies. A clarion call for recruitment of trained IT project managers with the knowledge, experience, and the ability to enforce an IT/ICT implementation methodology tested by time in environments that are similar to the culture and context where locally implemented. The appropriate masterplan of action or policy, cost leadership, differentiation, and focus designated to guide and accomplish a major construct or holistic development goal to implement a life cycle of IT/ICT projects successfully command a professional and skilled workforce. Business managers and IT

professionals in the private and public sectors must get serious about developing practical skills that are compatible and adaptive to the disruptive technological changes executed by a trained ICT workforce. The above findings of the research study are the basis for my following recommendations:

(a) Development and proper management of a professionally instituted organizational structure.

(b) Alignment of business goals, vision, and IT objectives with a national or regional strategy. These actions may help to set a strategic direction for the three tools of leadership: strategy, vision, and tactics.

(c) Create a communication plan that manages the dissemination of information in the business/government organization and project teams. Once the direction is defined, ample opportunity must be permitted for ongoing dialogue to achieve that direction. Organizational and individual actions to implement the strategy must trigger a mode of engagement among employees.

(d) Establish a project management methodology that encompasses all the necessary requirements of the PMBOK but also explicitly tailored to local/regional context, culture, and environment.

(e) Enable a knowledgebase that shares the experiences of every IT project manager and technical support initiatives, problems, incidents, and solutions. This reservoir of knowledge must contain accurate documentation of all professional activities. This process includes all project plans and guidelines, procedures, policies,

strategies, incidents, project risk management and contingency plans, business continuity plans (BCP)/disaster recovery, and other pertinent documents.

(f) Conceptualize, design, and configure the following four internetworking regions: (1) Train (training) domain, (2) Development domain, (3) Test domain, and (4) a Production domain (go.live), to induce a research and development apparatus for continuous growth and usefulness.

(g) Adopt a customer/citizen-centric culture that incorporates end users' input, expectations, and requirements in project planning and implementation.

(h) Develop an IT project implementation framework that aligns with the remedial measures of the PMBOK and describes a set of planned inter-related activities aimed at achieving defined project objectives.

IT project managers and professionals, business managers, researchers, scholars, and educational institutions may gain a more comprehensive understanding of strategies used by IT project managers in the Caribbean to practice successful IT and ICT project implementation and benefit from the findings of this study. The participants' knowledge and experience were essential to revealing strategies used for IT project implementation. The dissemination of the results of this study may occur through conferences, technical journal articles, and seminars. My plan also includes staging presentations of the findings at technical training events, posting to electronic professional literature, the International Journal of Computer and Information Technology, databases of universities, and colleges in the broader Caribbean to ensure the broadest possible exposure.

## Recommendations for Further Study

The focus of this qualitative multiple case study hinged on exploring the strategies used by IT project managers to implement IT frameworks designed to guide Caribbean ICT integration. The first limitation identified in this study included the belief that a small number of participants may offer responses to questions posed in interviews, which show a preference for what the researcher might want to hear (Yin, 2018). The selected population interviewed for this study involved IT project managers/coordinators from the Caribbean Islands of St. Vincent and the Grenadines and Grenada. The sample size included a total of 12: two project managers (M/F) from St. Vincent and the Grenadines and ten project managers (M) from Grenada. Future researchers might consider a more balanced and diversified selection of participants by use of a different sampling method such as purposeful sampling and expand recruiting to other neighboring countries.

The second limitation was, due to the narrow geographical location I chose to focus on (The Eastern Caribbean), the sample size and the results of this study may not reflect the opinions of governments and organizations in other geographical locations. Future research can address the limitations of this study by expanding the analysis to include developing countries in the entire Caribbean. Another limitation involved my request for pertinent implementation documents (policy and procedures). Recognizing that one of the inherent problems discussed with project managers concerned employees enforcing ‘ownership’ of their documents but hesitant to release such information for fear of misuse, I realized that they too became victims of their rationale for securing data.

## Reflections

As a doctoral student, the emphasis on social change took root immediately, which allowed me to fine-tune my expectations, purpose, and outlook, getting acquainted with the idea of service to citizens as a higher calling, and adapt to the academic psychology of learning at the highest level. I struggled at first to be full-throated during discussions amongst peers, understanding that I must now tweak each word and try to appear rational about subject matters. I give all the credit to my classmates for my easy transitioning to full academic discipline, dedication, and perseverance by observing their detailed work and ethical contributions. Adhering to these three principles helped to accomplish my goals toward a successful educational experience.

Having two decades of IT experience in the financial and healthcare industries was not sufficient to claim my all-round professional IT portfolio without connecting the circle of success to a theoretical understanding. Although circumstances of bias because of my previous lengthy work experience could have become an issue, I assertively took preventative action based on course work to better understand how to avoid it. Achieving my DIT would not have been possible without being passionate about a higher purpose of securing better education and standard of living opportunities for others, through online electronic and m-learning platforms. Information and communication technology (ICT) is the medium devoted to my mission as an ‘agent of change’ for the development of and the implementation of sociotechnical goals in the Caribbean diaspora and globally. I am optimistic that it would serve as a useful and worthy toolkit.

## Summary and Study Conclusions

A strong infrastructure backbone is necessary to provide top quality ICT services and contains a high-speed network, projection/display technology, video conferencing equipment, workstations, audio-visual systems, enterprise software, interactive devices middleware, and printers, etc. (Pramanik, Sarkar, & Kandar, 2017). Throughout the last decade growth of the internet user base, cloud and grid computing systems, and newly invented devices have contributed to the rapid development of ICT as a technological field. With proper guidance, developing nations could create an information-rich society and thus advance a sustainable digital economy. The world economies are transforming due to ICT's rapid evolution, and all countries are affected in distinct ways at different paces of digital transformation.

The implementation of ICT has inherent benefits to rural and urban development in the Caribbean and developing countries and could be a powerful tool for facilitating the development of e-government, e-commerce, e-health, and essential e/m-learning services. Progressive development in the synthesis of ICT, business, and education have become integral in our daily lives and play a major role in all aspects of modern society (Roztocki, Soja, & Weistroffer, 2019). Deemed as an economic development pillar, ICT can reward national competitive advantages and enhance the quality of human life by its use as educational and learning media. While everyday lives are affected by the adoption of ICT, society is impacted by improvements to the standard of living, implementation, enablement of IT infrastructure, and the propitious holistic integration of ICT.

# References

Abubakre, M., Ravishankar, M. N., & Coombs, C. (2017). Revisiting the trajectory of IT implementation in organisations: An IT culture perspective. *Information Technology & People, 30*(3), 562-579. Retrieved from http://doi.org/10.1108/ITP-09-2015-0217

Abu-Shanab, E. A. (2017). E-government familiarity influence on Jordanians' perceptions. *Telematics and Informatics, 34*(1), 103-113. doi:10.1016/j.tele.2016.05.001

Afshari, L. (2020). Organizational culture, social capital, and knowledge management: An integrated model. *International Journal of Knowledge Management, 16*(2). doi:10.4018/IJKM.2020040104

Aithal, P. S. (2016). A review on various e-business and m-business models & research opportunities. *International Journal of Management, IT and Engineering*, *6*(1), 275-298. doi:10.5281/zenodo.161146

Aizenman, J., Jinjarak, Y., Estrada, G., & Tian, S. (2018). Flexibility of adjustment to shocks: Economic growth and volatility of middle-income countries before and after the global financial crisis of 2008. *Emerging Markets Finance and Trade, 54*(5), 1112-1131. doi:10.1080/1540496X.2017.1422430

Ajibade, P. (2018). Technology acceptance model limitations and criticisms: Exploring the practical applications and use in technology-related studies, mixed-methods,

and qualitative researches. *Library Philosophy and Practice (e-journal)*. Retrieved from http://digitalcommons.unl.edu/libphilprac/1941

Ajzen, I., & Fishbein, M. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. *Contemporary Sociology, 6*, 244. doi:10.2307/2065853

Aladwani, A. M. (2016). Corruption as a source of e-Government projects failure in developing countries: A theoretical exposition. *International Journal of Information Management, 36*(1), 105-112. doi:10.1016/j.ijinfomgt.2015.10.005

Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., & Williams, M. D. (2016). Consumer adoption of mobile banking in Jordan: Examining the role of usefulness, ease of use, perceived risk and self-efficacy. *Journal of Enterprise Information Management, 29*, 118-139. doi:10.1108/JEIM-04-2015-0035

Al-Azawei, A. (2018). Predicting the adoption of social media: An integrated model and empirical study on Facebook usage. *Interdisciplinary Journal of Information, Knowledge & Management, 13*, 233-238. doi:10.28945/4106

Al-Dabbous, N., Abdulsalam, H., & Al Dallal, J. (2018). Assessment of non-functional properties for e-services. *Journal of Engineering Research 6*(4), 1-22. Retrieved from http://kuwaitjournals.org/jer/index.php/JER/article/view/4316

Aldiabat, K. M., & Navenec, C. L. L. (2018). Data saturation: The mysterious step in grounded theory method. *Qualitative Report, 23*, 245-261. Retrieved from http://tqr.nova.edu/

Aleixandre-Benavent, R., Infer, A. V., Alonso-Arroyo, A., Peset, F., & Ferrer, A. (2020). Research data sharing in Spain: Exploring determinants, practices, and perceptions. *Open Access, 5*(2), 1-14. doi:10.3390/data5020029

Al-Emran, M., Elsherif, H. M., & Shaalan, K. (2016). Investigating attitudes towards the use of mobile learning in higher education. *Computers in Human Behavior, 56,* 93-102. doi:10.1016/j.chb.2015.11.033

Ali, K. E., Mazen, S. A., & Hassanein, E. E. (2017). A proposed framework for the organization readiness assessment of IT innovation adoption in E-government environment. *IJICIS, 17(*3), 33-50. doi:10.21608/IJICIS.2017.8248

Ali, M., Zhou, L., Miller, L., & Leromonachou, P. (2016). User resistance in IT: A literature review. *International Journal of Information Management, 36*(1), 35-43. Retrieved from https://doi.org/10.1016/j.ijinfomgt.2015.09.007

Al.Kharousi, R. (2016). Enhancing information services in Omani academic libraries through Web 2.0 applications: A soft System methodology. *Journal of Chemical Information and Modeling, 53*(9), 1689–1699.

Almaiah, M. A., Jalil, M. A., & Man, M. (2016). Extending the TAM to examine the effects of quality features on mobile learning acceptance. *Journal of Computers in Education, 3*(4), 453-485. doi:10.1007/s40692-016-0074-1

Al Mansoori, K. A., Sarabdeen, J., & Tchantchane, A. L. (2018). Investigating Emirati citizens' adoption of e-government services in Abu Dhabi using modified

UTAUT model. *Information Technology & People, 31*(2), 455-481. doi.org/10.1108/ITP-12-2016-0290

Almarabeh, T., & Majdalawi, Y. (2019). Cloud computing of e-commerce. *Modern Applied Science, 13*(1), 27-35. doi:10.5539/mas.v13n1p27

Almeida, G. O., & Zouain, D. M. (2016). E-government impact on business and entrepreneurship in high-, upper-middle-and lower-income countries from 2008 to 2014: A linear mixed model approach. *Global Business Review, 17*(4), 743-758. doi:10.1177/0972150916645485

Al-Sharhan, S., Omran, E., & Lari, K. (2018). An integrated holistic model for an ehealth system: A national implementation approach and a new cloud-based security model. *International Journal of Information Management 47*(1), 121-130. Retrieved from https://doi.org/10.1016/j.ijinfomgt.2018.12.009

Alvertis, L., Biliri, E., Lampathaki, F., & Askounis, D. (2017). Social agents to enable pervasive social networking services. *Journal of Theoretical and Applied Electronic Commerce Research, 13*(3), 50-80. doi:10.4067/S0718-18762018000300104

Alwi, F., Setiawan, A., & Asrizal, A. (2018). Quality of life of persons with permanent colostomy: A phenomenological study. *Journal of Coloproctology*, *36*(2), 1-7. doi:10.1016/j.jcol.2018.06.001

Alzahrani, L., Al-Karaghouli, W., & Weerakkody, V. (2017). Analysing the critical factors influencing trust in e-government adoption from citizens' perspective: A

systematic review and a conceptual framework. *International Business Review, 26*(1), 164-175. doi:10.1016/j.ibusrev.2016.06.004

Amankwaa, L. (2016). Creating protocols for trustworthiness in qualitative research. *Journal of Cultural Diversity, 23*(3), 121-127. Retrieved from http://tuckerpub.com/jcd.htm

Amhag, l., Hellström, L., & Stigmar, M. (2019). Teacher educators' use of digital tools and needs for digital competence in higher education, *Journal of Digital Learning in Teacher Education, 35*(4), 203-220. doi:10.1080/21532974.2019.1646169

Amukugo, H. J., Jooste, K., & Van, D. A. (2015). Development of model to facilitate male involvement in the reproductive health context by the registered nurses. *International Journal of Advanced Nursing Studies, 4*(2), 122-130. doi:10.14419/ijans.v4i2.5018

Ang, C. K., Embi, M. A., & Yunus, M. M. (2016). Enhancing the quality of the findings of a longitudinal case study: Reviewing trustworthiness via ATLAS. *Qualitative Report, 21*(10), 1855-1867. Retrieved from https://nsuworks.nova.edu/tqr/vol21/iss10/7

Antonakis, J. (2017). On doing better science: From thrill of discovery to policy implications**.** *Leadership Quarterly, 28*(10), 5-21. doi:10.1016/j.leaqua.2017.01.006

Artto, K., Ahola, T., & Vartiainen, V. (2016). From the front end of projects to the back end of operations: Managing projects for value creation throughout the system

lifecycle. *International Journal of Project Management, 34*(2), 258-270. doi:10.1016/j.ijproman.2015.05.003

Asiimwe, E., & Grnlund, k. (2015). MLCMS actual use, perceived use, and experiences of use. *International Journal of Education and Development using ICT, 11*(1), 101-121. Retrieved from https://www.learntechlib.org/p/151054/

Au, A. (2019). Thinking about cross-cultural differences in qualitative interviewing: Practices for more responsive and trusting encounters. *Qualitative Report, 24*(1), 58-77. Retrieved from https://nsuworks.nova.edu/tqr/vol24/iss1/5/

Avgerou, C. (2002). *Information systems and global diversity*. doi:10.1093/acprof.oso/9780199263424.001.0001

Awa, H. O., Ojiabo, O. U., & Emecheta, B. C. (2015). Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science and Technology Policy Management, 6*(1), 76-94. doi:10.1108/JSTPM-04-2014-0012

Awiagah, R., Kang, J., & Lim, J. (2016). Factors affecting e-commerce adoption among SMEs in Ghana. *Information Development, 32*(4), 815-836. doi:10.1177/0266666915571427

Axson, S. A., Giodano, N. A., Hermann, R. M., & Ulrich, C. M. (2017). Evaluating nurse understanding and participation in the informed consent process. *Nursing Ethics, 26*(4), 1050-1061. doi:10.1177/0969733017740175

Bagozzi, R., Davis, F., & Warshaw, P. (1992). Development and test of a theory of technological learning and usage. *Human Relations, 45(*7), 659-686. doi:10.1177/001872679204500702

Bakker, J. I. (2019). Grounded theory methodology and grounded theory method: Introduction to the special issue. *Sociological Focus, 52*(2), 91-106. doi:10.1080/00380237.2019.1550592

Balasubramanian, N. A. (2017). Perception of adolescence on healthy lifestyle and factors contributing to health and its barrier: Grounded theory approach. *Asian Journal of Nursing Education and Research, 7*(1), 26-30. doi:10.5958/2349-2996.2017.00007.6

Balavivekanandhan, A., & Arulchelvan, S. (2015). A study on students' acquisition of IT knowledge and its implication on m-learning. *Scientific World Journal*, 1-11. doi:10.1155/2015/248760

Barnard, M. (2016). How to apply for research ethics committee approval. *Nursing Children and Young People*, *28*(6), 16. doi:10.7748/ncyp.28.6.16.s20

Bauer, J., & Bellamy, A. (2017). Latent effects of cloud computing on IT capacity management structures. *International Journal of Computer and Communication Engineering, 6*(2), 111-126. doi:10.17706/ijcce.2017.6.2.111-126

Bawa, P., & Watson, S. L. (2017). A phenomenological study of graduate Chinese students' English writing challenges. *The Qualitative Report*, *22*(3), 779-796. Retrieved from https://nsuworks.nova.edu/tqr/vol22/iss3/7/

Bayliss, K., & Van Waeyenberge, E. (2018). Unpacking the public private partnership revival. *Journal of Development Studies, 54*(4), 577-593. doi:10.1080/00220388.2017.1303671

Bell, E. E. (2017). A narrative inquiry: A black male looking to teach. *The Qualitative Report, 22*(4), 1137-1150. Retrieved from https://nsuworks.nova.edu/tqr/vol22/iss4/12/

Belmont Report, (1979). *The Belmont Report: Ethical principles and guidelines for the protection of human subjects of research.* National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. Retrieved from https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open, 2,* 8-14. Retrieved from https://doi.org/10.1016/j.npls.2016.01.001

Benoot, C., Hannes, K., & Bilsen, J. (2016). The use of purposeful sampling in a qualitative evidence synthesis: A worked example on sexual adjustment to a cancer trajectory. *BMC Medical Research Methodology, 16*(1), 21. doi:10.1186/s12874-016-0114-6

Birken, S. A., Powell1, B. J., Shea, C. M., Haines, E. R., Kirk, M. A., Leeman, J., … Presseau, J. (2017). Criteria for selecting implementation science theories and frameworks: Results from an international survey. *Implementation Science, 12*(1). doi:10.1186/s13012-017-0656-y

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member Checking: A tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Research, 26*(13), 1802-1811. doi:10.1177/1049732316654870

Bogart, V. D., & Wichadee, S. (2015). Exploring students' intention to use LINE for academic purposes based on technology acceptance model. *International Review of Research in Open and Distance Learning, 16*. doi:10.19173/irrodl.v16i3.1894

Booth, A. (2016). Searching for qualitative research for inclusion in systematic reviews: A structured methodological review. *Systematic Reviews, 5*, 1-23. doi:10.1186/s13643-016-0249-x

Branca, T. A., Fornai, B., Colla, V., Murri, M. M., Streppa, E., & Schröder, A. J. (2020). The challenge of digitalization in the steel sector. *Metals, 10*, 288. doi:10.3390/met10020288

Bromwich, M., & Scapens, R. W. (2016). Management accounting research: 25 Years On. *Management Accounting Research, 31*, 1-9. doi:10.1016/j.mar.2016.03.002

Buabeng-Andoh, C., Yaokumah, W., & Tarhini, A. (2019). Investigating students' intentions to use ICT: A comparison of theoretical models. *Education and Information Technologies, 24*(1), 643-660. doi:10.1007/s10639-018-9796-1

Bungay, V., Oliffe, J., & Atchison, C. (2016). Addressing underrepresentation in sex work research: Reflections on designing a purposeful sampling strategy. *Qualitative Health Research, 26*, 966-978. doi:10.1177/1049732315613042

Burda, M., van den Akker, M., van der Horst, F., Lemmens, P., & Knottnerus, J. A. (2016). Collecting and validating experiential expertise is doable but poses methodological challenges. *Journal of Clinical Epidemiology; Elmsford, 72*(1), 10-15. doi:10.1016/j.jclinepi.2015.10.021

Caboral-Stevens, M., Whetsell, M. V., Evangelista, L. S., Cypress, B., & Nickitas, D. (2015). U.S.A.B.I.L.I.T.Y. framework for older adults. *Research in Gerontological Nursing, 8*(6), 300-306. doi:10.3928/19404921-20150522-02

Callaghan, C. W. (2016). Disaster management, crowdsourced R&D and probabilistic innovation theory: Toward real time disaster response capability. *International Journal of Disaster Risk Reduction, 17*, 238-250. doi:10.1016/j.ijdrr.2016.05.004

Cappellaro, G. (2017). Ethnography in public management research: A systematic review and future directions. *International Public Management Journal, 20*, 14-48. doi:10.1080/10967494.2016

Caretta, M. A. (2015). Member checking: A feminist participatory analysis of the use of preliminary results pamphlets in cross-cultural, cross-language research. *Qualitative Research, 16*(3), 305-318. doi:10.1177/1468794115606495

Carter, L., Weerakkody, V., Phillips, B., & Dwivedi, Y. K. (2016). Citizen adoption of e-government services: Exploring citizen perceptions of online services in the United States and United Kingdom. *Information Systems Management, 33*(2), 124-140. doi:10.1080/10580530.2016.1155948

Caserta, S., & Madsen, M. R. (2016). Between community law and common law: The rise of the Caribbean Court of Justice at the intersection of regional integration and post-colonial legacies. *Law and Contemporary Problems, 79*(1), 89-115. Retrieved from https://scholarship.law.duke.edu/lcp/vol79/iss1/4/

Castleberry, A., & Nolen, A. (2018). Thematic analysis of qualitative research data: Is it as easy as it sounds? *Currents in Pharmacy Teachings and Learning, 10*(6), 807-815. doi:10.1016/j.cptl.2018.03.019

Chaparro-Peláez, J., Agudo-Peregrin, A. F., & Pascual-Miguel, F. J. (2016). Conjoint analysis of drivers and inhibitors of e-commerce adoption. *Journal of Business Research, 69*(4), 1277-1282. doi:10.1016/j.jbusres.2015.10.092

Charlick, S., Pincombe, J., McKellar, L., & Fielder, A. (2016). Making sense of participants' experiences: Interpretive phenomenological analysis in midwifery research. *International Journal of Doctoral Studies, 11,* 205-216. Retrieved from https://www.informingscience.org/Publications/3486

Chen, P., Lin, C., & Wu, W. (2020). Big data management in healthcare: Adoption challenges and implications. *International Journal of Information Management, 53*(1), 1-11. doi:10.1016/j.ijinfomgt.2020.102078

Chintalapati, N., & Daruri, V. S. K. (2017). Examining the use of YouTube as a learning resource in higher education: Scale development and validation of TAM model. *Telematics and Informatics, 34*(6), 853-860. doi:10.1016/j.tele.2016.08.008

Choi, T., & Chandler, S. M. (2020). Knowledge vacuum: An organizational learning dynamic of how e-government innovations fail. *Government Information Quarterly, 37*(1), 1-11. doi:10.1016/j.giq.2019.101416

Chowthi-Williams, A., Curzio, J., & Lerman, S. (2016). Evaluation of how a curriculum change in nurse education was managed through the application of a business change management model: A qualitative case study. *Nurse Education Today, 36,*133-138. doi:10.1016/j.nedt.2015.08.023

Chung, S. Y., & Nahm, E. S. (2015). Testing reliability and validity of the eHealth literacy scale (eHEALS) for older adults recruited online. *CIN: Computers, Informatics, Nursing, 33*, 150-156. doi:10.1097/CIN.0000000000000146

Clark, L., Birkhead, A., Fernandez, C., & Egger, M. (2017). A transcript and translation protocol for sensitive cross-cultural team research. *Qualitative Health Research, 27*(12), 1751-1764. doi:10.1177/1049732317726761

Connelly, L. M. (2016). Understanding research. Trustworthiness in qualitative research. *MedSurg Nursing Journal, 25*(6), 435-436. Retrieved from https://www.amsn.org/

Corti, L., & Van den Eynden, V. (2015). Learning to manage and share data: Jumpstarting the research methods curriculum. *International Journal of Social Research Methodology, 5*, 545-559. doi:10.1080/13645579.2015.1062627

Creamer, E. G., & Tendhar, C. (2016). Using inferences to evaluate the value added of mixed methods research: A content analysis. *International Journal of Multiple Research Approaches, 9*(1), 57-72. doi:10.1080/18340806.2015.1129286

Crowe, M., Inder, M., & Porter, R. (2015). Conducting qualitative research in mental health: Thematic and content analysis. *Australian & New Zealand Journal of Psychiatry, 49*, 616-623. doi:10.1177/0004867415582053

CTU, (2017). Vision and roadmap for a CARICOM Single ICT Space. Retrieved from https://caricom.org/documents/15510-vision_and_roadmap_for_a_single_ict_space_-_final_version_updated.pdf

Dasgupta, M. (2015). Exploring the relevance of case study research. *Vision, 19*(2), 147-160. doi:10.1177/097226291557661

Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. Cambridge, MA: Massachusetts Institute of Technology

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340. doi:10.2307/249008

Dejonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: A balance of relationship and rigour. *Family Medicine and Community Health, 7*, e000057. doi:10.1136/fmch-2018-000057

Dempsey, L., Dowling, M., Larkin, P., & Murphy, K. (2016). Sensitive interviewing in qualitative research. *Research in Nursing & Health*, *39*, 480-490. doi:10.1002/nur.21743

Denison, J. (2016). Social theory and narrative research: A point of view. *Sport, Education and Society, 21*(1), 7-10. doi:10.1080/13573322.2015.1076385

De Pietro, C., & Francetic, I. (2018). E-health in Switzerland: The laborious adoption of the federal law on electronic health records (EHR) and health information exchange (HIE) networks. *Health Policy, 122*(2), 69-74. doi:10.1016/j.healthpol.2017.11.005

Devotta, K., Woodhall-Melnik, J., Pedersen, C., Wendaferew, A., Dowbor, T., Guilcher, S., & Matheson, F. (2016). Enriching qualitative research by engaging peer interviewers: A case study. *Qualitative Research, 16,* 661-680. doi:10.1177/1468794115626244

Dikko, M. (2016). Establishing construct validity and reliability: Pilot testing of a qualitative interview for research in Takaful (Islamic Insurance). *Qualitative Report, 21*(3), 521-528. Retrieved from https://nsuworks.nova.edu/tqr/vol21/iss3/6/

Dumez, H. (2015). What is a case, and what is a case study? *Bulletin of Sociological Methodology, 127*(1), 43-57. doi:10.1177/0759106315582200

Dwivedi, Y., Rana, N., Janssen, M., Lal, B., Williams, M., & Clement, M. (2017). An empirical validation of a unified model of electronic government adoption (UMEGA). *Government Information Quarterly, 34*(2), 211-230. doi:10.1016/j.giq.2017.03.001

Dwivedi, Y. K., Sahu, G. P., Rana, N., Singh, M., & Chandwani, R. (2016). Common services centres (CSCs) as an approach to bridge the digital divide: Reflecting on

challenges and obstacles, *Transforming Government: People Process and Policy, 10*(4), 511-525. doi:10.1108/TG-01-2016-0006

Dwivedi, Y. K., Shareef, M. A., Simintiras, A. C., Lal, B., & Weerakkody, V. (2016). A generalised adoption model for services: A cross-country comparison of mobile health (m-health). *Government Information Quarterly, 33*(1), 174-187. doi:10.1016/j.giq.2015.06.003

Dwivedi, Y. K., Wastell, D., Laumer, S., Henriksen, H. Z., Myers, M. D., & Bunker, D. (2015). Research on information systems failures and successes: Status update and future directions. *Information Systems Frontiers, 17*(1), 143-157. doi:10.1007/s10796-014-9500-y.

Eden, D. (2017). Field experiments in organizations. *Annual Review of Organizational Psychology and Organizational Behavior, 4*, 91-122. doi:10.1146/annurev-orgpsych-041015-062400

Edwards-Schachter, M., & Wallace, M. L. (2017). Shaken, but not stirred: Sixty years of defining social innovation. *Technological Forecasting and Social Change, 119,* 64-79. doi:10.1016/j.techfore.2017.03.012

Egbe, C. O. (2015). Experiences and effects of psychiatric stigma: Monologues of the stigmatizers and the stigmatized in an African setting. *International Journal of Qualitative Studies on Health and Well-Being, 10*(1), 24-37. doi:10.3402/qhw.v10.27954

El-Kasim, M., & Idid, S. A. (2016). Perceived usefulness, perceived ease of use, perceived mutual relationship, perceived interactivity as determinants of social media use among PR practitioners. *Journal of Social Sciences and Humanities, 11*(1), 282-299. Retrieved from http://ejournal.ukm.my/ebangi/issue/view/809

El Said, G. R. (2017). A cloud computing-based model of e-commerce adoption for developing countries. *Journal of Electronic Commerce in Organizations, 15*(3), 64-82. doi:10.4018/JECO.2017070104

Enosh, G., & Ben-Ari, A. (2016). Reflexivity: The creation of liminal spaces—Researchers, participants, and research encounters. *Qualitative Health Research, 26*, 578-584. doi:10.1177/1049732315587878

Erlingsson, C., & Brysiewicz, P. (2017). A hands-on guide to doing content analysis. *African Journal of Emergency Medicine, 7*(3), 93-99. doi:10.1016/j.afjem.2017.08.001

Eslami, M. H., & Lakemond, N. (2016). Knowledge integration with customers in collaborative product development projects. *Journal of Business & Industrial Marketing, 31*(7), 889-900. doi:10.1108/JBIM-05-2014-0099

Fahmideh, M., & Beydoun, G. (2018). Reusing empirical knowledge during cloud computing adoption. *Journal of Systems and Software, 138*(2018), 124-157. doi:10.1016/j.jss.2017.12.011

Fauzy, F. A. A., Shah, Z. A., Saedudin, R., & Kasim, S. (2018). Registration system and UTM games decision using the website application. *International Journal of Engineering & Technology, 7*(2.2), 45-47. doi:10.14419/ijet.v7i2.2.12320

Fayad, R., & Paper, D. (2015). The technology acceptance model e-commerce extension: A conceptual framework. *4th. World Conference on Business, Economics and Management, WCBEM. Procedia Economics and Finance, 26,* 1000-1006. doi:10.1016/S2212-5671(15)00922-3

Ferraris, A., Santoro, G., & Dezi, L. (2017). How MNC's subsidiaries may improve their innovative performance? The role of external sources and knowledge management capabilities. *Journal of Knowledge Management, 21*(3), 540-552. Retrieved from https://www.emeraldinsight.com/doi/abs/10.1108/JKM-09-2016-0411

Ferraz, I., & Guedes, A. (2017). Protagonist-patient and servant-doctor: A medicine for the sick doctor-patient relationship. *European Psychiatry, 41,* S683. Retrieved from https://doi.org/10.1016/j.eurpsy.2017.01.1185.

Finlay, K. A., & Elander, J. (2016). Reflecting the transition from pain management services to chronic pain support group attendance: An interpretative phenomenological analysis. *British Journal of Health Psychology, 21*(3), 660-676. doi:10.1111/ bjhp.12194

Fleet, D., Burton, A., Reeves, A., & DasGupta, M. P. (2016). A case for taking the dual role of counsellor-researcher in qualitative research. *Qualitative Research in Psychology, 13*, 328-346. doi:10.1080/14780887.2016.1205694

Fletcher, D., DeMassis, A., & Nordqvist, M. (2016). Qualitative research practices and family business scholarship: A review and future research agenda. *Journal of Family Business Strategy, 7*(1), 8-25. doi:10.1016/j.jfbs.2015.08.001

Foss, N. J., & Hallberg, N. L. (2017). Changing assumptions and progressive change in theories of strategic organization. *Strategic Organization, 15*(3), 410-422. doi:10.1177/1476127016671099

Franco, M., & Garcia, M. (2017). Drivers of ICT acceptance and implementation in micro-firms in the estate agent sector: Influence on organizational performance. *Information Technology for Development, 24*(4), 658-680. Retrieved from https://doi.org/10.1080/02681102.2017.1379378

Frankfort, C., Nachmias, D., & DeWaard, J. (2015). *Research methods in the social sciences* (8th ed.). New York, NY: Worth.

Fusch, P., Fusch, G. E., & Ness, L. (2017). How to conduct a mini-ethnographic case study: A guide for novice researchers. *Qualitative Report, 22*(3), 923-941. Retrieved from http://www.nsuworks.nova.edu

Fusch, P., Fusch, G. E., & Ness, L. R. (2018). Denzin's paradigm shift: Revisiting triangulation in qualitative research. *Journal of Social Change, 10*(1), 19-32. doi:10.5590/JOSC.2018.10.1.02

Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *Qualitative Report, 20*, 1408-1416. Retrieved from http://nsuworks.nova.edu/tqr/

Gabriel, Y. (2015). Reflexivity and beyond? A plea for imagination in qualitative research methodology. *Qualitative research in organizations and management. An International Journal, 10*(4), 332-336. doi:10.1108/qrom-07-2015-1305

Gammelgaard, B. (2017). The qualitative case study. *International Journal of Logistics Management, 28*(4), 910-913. doi:10.1108/IJLM-09-2017-0231

Gangwar, H., Date, H., & Ramaswamy, R. (2015). Understanding determinants of cloud computing adoption using an integrated TAM-TOE model. *Journal of Enterprise Information Management, 28*(1), 107-130. doi:10.1108/JEIM-08-2013-0065

Garay, L., Font, X., & Corrons, A. (2018). Sustainability-oriented innovation in tourism: An analysis based on the decomposed theory of planned behavior. *Journal of Travel Research, 58*(4), 622-636. doi:10.1177/0047287518771215

García-Galán, J., Trinidad, P., Rana, O. F., & Ruiz-Cortés, A. (2016). Automated configuration support for infrastructure migration to the cloud. *Future Generation Computer System, 55*, 200-212. Retrieved from https://doi.org/10.1016/j. future.2015.03.006

Gentles, S. J., Charles, C., Ploeg, J., & McKibbon, K. A. (2015). Sampling in qualitative research: Insights from an overview of the methods literature. *Qualitative Report, 20*, 1772-1789. Retrieved from http://nsuworks.nova.edu/

Ghiga, I., & Stalsby, C. L. (2016). Struggling to be a defender of health-a qualitative study on the pharmacists' perceptions of their role in antibiotic consumption and antibiotic resistance in Romania. *Journal of Pharmaceutical Policy and Practice, 9*(1), 1-10. doi:10.1186/s40545-016-0061-y

Gholami, M. F., Daneshgar, F., Beydoun, G., & Rabhi, F. (2017). Challenges in migrating legacy software systems to the cloud—an empirical study. *Information Systems, 67(*2017), 100-113. doi:10.1016/j.is.2017.03.008

Gholami, M. F., Daneshgar, F., Low, G., & Beydoun, G. (2016). Cloud migration process—a survey, evaluation framework, and open challenges. *Journal of Systems and Software, 120*, 31-69. Retrieved from https://doi.org/10.1016/j.jss.2016.06.068

Gilbert, M., Samuel, M., & Mavellas, S. (2018). A framework hub in Zimbabwe: A holistic approach in fostering economic growth. *Journal of Systems Integration, 9*(1), 32-41. doi:10.20470/jsi.v9i1.327

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research notes on the Gioia methodology. *Organizational Research Methods, 16*(1), 15-31. doi:10.1177/1094428112452151

Glyptis, L., Christofi, M., Vrontis, D., Del Giudice, M., Dimitrioua, S., & Michael, P. (2020). E-government implementation challenges in small countries: The project manager's perspective. *Technological Forecasting and Social Change, 152,* [119880]. Retrieved from https://doi.org/10.1016/j.techfore.2019.119880

Gokmen, O. F., Uysal, M., Yasar, H., Kirksekiz, A., Guvendi, G. M., & Horzum, M. B. (2017). Methodological trends of the distance education theses published in turkey from 2005 to 2014: A content analysis. *Egitim ve Bilim, 42*(189), 1-25. doi:10.15390/eb.2017.6163

Goodell, L., Stage, V., & Cooke, N. (2016). Practical qualitative research strategies: Training interviewers and coders. *Journal of Nutrition Education and Behavior, 48*(6), 578-585. doi:10.1016/j.jneb.2016.06.001

Gopalakrishna-Remani, V., Jones, R., & Camp, K. (2018). Levels of EMR adoption in U.S. hospitals: An empirical examination of absorptive capacity, institutional pressures, top management beliefs, and participation. *Information Systems Frontiers*, 1-20. Retrieved from https://doi.org/10.1007/s10796-018-9836-9.

Goyal, S., Sergi, B. S., & Esposito, M. (2017). Literature review of engineering trends and future directions of e-commerce in global business landscape. *World Review of Entrepreneurship Management and Sustainable Development, 15*(1/2), 1-31. doi:10.1504/WREMSD.2019.098454

Grady, C. (2019). The contribution of ethics review to protection of human participants: Comment on “measuring the quality and performance of institutional review boards.” *Journal of Empirical Research on Human Research Ethics*, 1-3. doi:10.1177/1556264619837774

Greenwood, S., Perrin, A., & Duggan, M. (2016). Social media update 2016, pew research center. Retrieved from www.pewinternet.org/2016/11/11/social-media-update-2016/

Grieb, S. D., Eder, M. M., Smith, K. C., & Calhoun, K. T. D. (2015). Qualitative research and community-based participatory research: Considerations for effective dissemination in the peer-reviewed literature. *Progress in Community Health Partnerships, 9*(2), 275-282. doi:10.1353/cpr.2015.0041

Gross, J. M., Blue-Banning, M., Turnbull, H. R., & Francis, G. L. (2015). Identifying and defining the structures that guide the implementation of participant direction programs and support program participants a document analysis. *Journal of Disability Policy Studies*, *26*, 12-23. doi:10.1177/1044207313514112

Guest, G., Namey, E., & McKenna, K. (2017). How many focus groups are enough? Building an evidence base for nonprobability sample sizes. *Field Methods,* 29, 3-22. doi:10.1177/1525822X16639015

Guetterman, T. C. (2015). Description of sampling practices within five approaches to qualitative research in education and the health science. *FQS, 16*(2), 1-23. Retrieved from http://dx.doi.org/10.17169/fqs-16.2.2290

Gunawong, P., & Gao, P. (2017). Understanding e-government failure in the developing country context: A process-oriented study. *Information Technology for Development, 23*(1), 153-178. Retrieved from http://dx.doi.org/10.1080/02681102.2016.1269713

Hachicha, Z. S., & Mezghani, K. (2018). Understanding intentions to switch toward cloud computing at firms' level: A multiple case study in Tunisia. *Journal of Global Information Management, 26*(1), 136-165. doi:10.4018/JGIM.2018010108

Hagaman, A. K., & Wutich, A. (2017). How many interviews are enough to identify metathemes in multisited and cross-cultural research? Another perspective on Guest, Bunce, and Johnson's 2006 landmark study. *Fields Methods, 29*(1), 23-41. doi:10.1177/1525822X16640447

Hai, L. C., & Alam Kazmi, S. H. (2015). Dynamic support of government in online shopping. *Asian Social Science*, *11*(22), 1-9. doi:10.5539/ass.v11n22p1

Hammad, W., & Hallinger, P. (2017). A systematic review of conceptual models and methods used in research on education leadership and management in Arab societies. *School Leadership & Management, 37*, 434-456. doi:10.1080/13632434.2017.1366441

Hansen, M. B., & Norup, I. (2017). Leading the implementation of ICT innovation. *Public Administration Review*, *77*(6), 851-860. Retrieved from https://doi.org/10.1111/puar.12807

Hariguna, T., & Berlilana, B. (2017). Understanding of antecedents to achieve customer trust and customer intention to purchase e-commerce in social media, an empirical assessment. *International Journal of Electrical and Computer Engineering*, *7*(3), 1240-1245. doi:10.11591/ijece.v7i3.pp1240-1245

Hariguna, T., Hung, C., & Sukmana, H. T. (2019). The antecedent of citizen intention use of e-government service. *Telkomnika, 17*(1), 202-209. doi:10.12928/TELKOMNIKA.v17i1.11588

Hariguna, T., Lai, M., & Chen, S. (2017). Understanding information system quality on public e-government service intention: An empirical study. *International Journal of Innovation and Sustainable Development, 11*(2/3), 271-290. doi:10.1504/IJISD.2017.083290

Harryanto, J., Muchran, M., & Ahmar, A. S. (2019). Application of TAM model to the use of information technology. *International Journal of Engineering & Technology, 7*(2,9), 37-40. Retrieved from https://www.sciencepubco.com/index.php/ijet/article/view/13341

Hashem, I. A. T., Yaqoob, I., Anuar, N. B., Mokhtar, S., Gani, A., & Khan, S. U. (2015). The rise of "big data" on cloud computing: Review and open research issues. *Information Systems, 47,* 98-115. Retrieved from https://doi.org/10.1016/j.is.2014.07.006

Hauser, O. P., Linos, E., & Rogers, T. (2017). Innovation with field experiments: Studying organizational behaviors in actual organizations. *Research in Organizational Behavior, 37,* 185-198. doi:10.1016/j.riob.2017.10.004

Hays, D. G., Wood, C., Dahl, H., & Kirk-Jenkins, A. (2016). Methodological rigor in journal of counseling & development qualitative research articles: A 15-year

review. *Journal of Counseling & Development, 94,* 172-183. doi:10.1002/jcad.12074

Hennink, M. M., Kaiser, B. N., & Weber, M. B. (2019). What influences saturation? Estimating sizes in focus group research. *Qualitative Health Research,* 1-4. doi:10.1177/1049732318821692

Hidalgo, A., Gabaly, S., Alonso, G. M., & Urueña, A. (2020). The digital divide in light of sustainable development: An approach through advanced machine learning technologies. *Technological Forecasting & Social Change, 150*. doi:10.1016/j.techfore.2019.119754

Hinde, S., & Spackman, E. (2015). Bidirectional citation searching to completion: An exploration of literature searching methods. *PharmacoEconomics, 33*(1), 5-11. doi:10.1007/s40273-014-0205-3.

Hitchen, E. L., Nylund, P. A., Ferràs, X., & Mussons, S. (2017). Social media: Open innovation in SMEs finds new support. *Journal of Business Strategy, 38* (3), 21-29. Retrieved from https://www.emeraldinsight.com/doi/abs/10.1108/JBS-02-2016-0015

Hjelm, M., Holst, G., Willman, A., Bohman, D., & Kristensson, J. (2015). The work of case managers as experienced by older persons (75+) with multi-morbidity – a focused ethnography. *BMC Geriatrics; London, 15*(1), 1-11. doi:10.1186/s12877-015-0172-3

Hjeltnes, A., Binder, P.-E., Moltu, C., & Dundas, I. (2017). Facing the fear of failure: An explorative qualitative study of client experiences in a mindfulness-based stress reduction program for university students with academic evaluation anxiety. *International Journal of Qualitative Studies on Health and Well-Being, 10,* 14-23. doi:10.3402/qhw.v10.27990

Hodge, H., Carson, D., Carson, D. A., Newman, L., & Garret, J. (2017). Using Internet technologies in rural communities to access services: The views of older people and service providers. *Journal of Rural Studies 1*(1), 1-10. doi:10.1016/j.jrurstud.2016.06.016

Hojjati, S. N., & Khodakarami, M. (2016). Evaluation of factors affecting the adoption of smart buildings using the technology acceptance model. *International Journal of Advanced Networking and Applications, 7*(6), 2936-2943. Retrieved from http://www.ijana.in/papers/V7I6-5.pdf

Holter, M., Johansen, A., Ness, O., Brinkmann, S., Hoybye, M., & Brendryen, H. (2019). Qualitative interview studies of working mechanisms in electronic health: Tools to enhance study quality. *Journal of Medical Internet Research, 2*(5), 1-11. doi:10.2196/10354

Hoque, M., Albar, A., & Alam, J. (2016). Factors influencing physicians' acceptance of e-health in developing country. *International Journal of Healthcare Information Systems and Informatics, 11*(1), 58-70. Retrieved from https://doi.org/10. 4018/ijhisi.2016010104.

Hoque, M., Bao, Y., & Sorwar, G. (2016). Investigating factors influencing the adoption of e-health in developing countries: A patient's perspective. *Informatics for Health & Social Care, 42*(1), 1-17. Retrieved from https://doi.org/10.3109/17538157.2015.1075541.

Hossain, A., Quaresma, R., & Rahman, H. (2019). Investigating factors influencing the physicians' adoption of electronic health record (EHR) in healthcare system of Bangladesh: An empirical study. *International Journal of Information Management, 44*, 76-87. Retrieved from https://doi.org/10.1016/j.ijinfomgt.2018.09.016

Houghton, C., Murphy, K., Shaw, D., & Casey, D. (2015). Qualitative case study data analysis: An example from practice. *Nurse Researcher, 22*(5), 8-12. doi:10.7748/nr.22.5.8.e1307

Hsieh, M. Y. (2019). The most sustainable niche principles of social media education in a higher education contracting era. *Sustainability, 12*, 399. doi:10.3390/su12010399

Husin, M. H., Loghmani, N., & Abidin, Z. S. S. (2017). Increasing e-government adoption in Malaysia: MyEG case study. *Journal of Systems and Information Technology, 19*(3/4), 202-227. doi:10.1108/JSIT-01-2017-0007

Hussain, S. A., Fatima, M., Saeed, A., Raza, I., & Shahzad, R. K. (2017). Multilevel classification of security concerns in cloud computing. *Applied Computing and Informatics, 13*(1), 57-65. doi:10.1016/j.aci.2016.03.001

Hwang, Y., Al-Arabiat, M., & Shin, D. (2016). Understanding technology acceptance in a mandatory environment: A literature review. *Information Development, 32(*4), 1266-1283. doi:10.1177/0266666915593621

Ibrahim, N., & Edgley, A. (2015). Embedding researcher's reflexive accounts within the analysis of a semistructured qualitative interview. *Qualitative Report, 20*(10), 1671-1681. Retrieved from https://core.ac.uk/download/pdf/51087467.pdf

IDB, (2018). Exponential disruption in the digital economy. III CEO Summit of the Americas, Peru 2018. Retrieved from https://webimages.iadb.org/ publications/english/document/Exponential-Disruption-in-the-Digital-Economy.pdf

Imran, A., & Gregor, S. (2019). Conceptualizing an IT mindset and its relationship to IT knowledge and intention to explore IT in the workplace. *Information Technology and People, 32*(6), 1536-1563. doi:10.1108/ITP-04-2017-0115

Iqbal, S., & Bhatti, Z. A. (2015). An investigation of university student readiness toward m-learning using technology acceptance model. *International Review of Research in Open and Distributed Learning, 16*(4), 83-103. doi:10.19173/irrodl.v16i4.2351

Irani, E. (2019). The use of videoconferencing for qualitative interviewing: Opportunities, challenges, and considerations. *Clinical Nursing Research, 28*(1), 3-8. doi:10.1177/1054773818803170

Islam, A., & Mohammed, A. Y. (2020). Viability of the extended technology accepted model: An empirical study. *Journal of Information and Communication*

*Technology, 10*, 85-98. Retrieved from http://e-journal.uum.edu.my/index.php/jict/article/view/8110

Jallow, A., Demian, P., Anumba, C., & Baldwin, A. (2017). An enterprise architecture framework for electronic requirements information management. *International Journal of Information Management, 37*(5), 455-472. Retrieved from https://doi.org/10.1016/j.ijinfomgt.2017.04.005.

Jansen, A., & Olnes, S. (2016). The nature of public e-services and their quality dimensions. *Government Information Quarterly, 33*(4), 647-657. doi:10.1016/j.giq.2016.08.005

Jeppesen, J. (2016). From interview to transcript to story: Elucidating the construction of journalistic narrative as qualitative research. *Qualitative Report, 21*(9), 1636-1650. Retrieved from https://nsuworks.nova.edu/tqr/vol21/iss9/5/

Johnson, J. L., Adkins, D., & Chauvin, S. (2019). Quality indicators of rigor in qualitative research. *American Journal of Pharmaceutical Education,* 1-22. Retrieved from https://www.ajpe.org/doi/abs/10.5688/ajpe7120

Jones, T., Liao, H., Wang, B., & Li, B. (2016). ICT as a general-purpose technology: The productivity of ICT in the United States revisited. *Information Economics and Policy*, *36*, 10-25. doi:10.1016/j.infoecopol.2016.05.001

Joo, Y. J., Joung, S., Lim, E., & Lee, M. (2015). Analysis of factors influencing facebook persistence. *International Journal of Innovation, Management and Technology, 6*, 105-108. doi:10.7763/IJIMT.2015.V6.583

Jorgenson, D. W., & Vu, K. M. (2016). The ICT revolution, world economic growth, and policy issues. *Telecommunications Policy, 40*(5), 383-397. doi:10.1016/j.telpol.2016.01.002

Joshi, P. R., & Islam, S. (2018). E-government maturity model for sustainable e-government services from the perspective of developing countries. *Sustainability, 10*(6), 2071-1050. doi:10.3390/su10061882

Joslin, R., & Muller, R. (2016a). The relationship between project governance and project success. *International Journal of Project Management, 34*(3), 613-626. doi:10.1016/j.ijproman.2016.01.008

Joslin, R., & Muller, R. (2016b). Identifying interesting project phenomena using philosophical and methodological triangulation. *International Journal of Project Management, 34*, 1043-1056. doi:10.1016/j.ijproman.2016.05.005

Jung, D. (2019). Assessing citizen adoption of e-government initiatives in Gambia: A validation of the technology acceptance model in information systems success. A critical article review, with questions to its publishers. *Government Information Quarterly, 36*(1), 5-7. Retrieved from https://doi.org/10.1016/j.giq.2018.11.005

Kabanda, S., & Brown, I. (2017). A structuration analysis of small and medium enterprise (SME) adoption of e-commerce: The case of Tanzania. *Telematics and Informatics, 34*(4), 118-132. doi:10.1016/j.tele.2017.01.002

Kachouie, R., & Sedighadeli, S. (2015). New product development success factors in prospector organizations: Mixed method approach. *International Journal of Innovation Management*, *19*, 150-155. doi:10.1142/s1363919615500401

Kamaruddin, K., & Noor, N. L. (2017). From e-government to t-government: A Malaysian citizens' readiness study. *Journal of Telecommunication, Electronic and Computer Engineering, 9*(2–9), 15–21. Retrieved from http://journal.utem.edu. my/index.php/jtec/article/view/2671

Kang, L., Hashmi, S. Z., Nguyen, J., Lee, S. K., Weiland, A. J., & Mancuso, C. A. (2016). Patients with thumb carpometacarpal arthritis have quantifiable characteristic expectations that can be measured with a survey. *Clinical Orthopaedics and Related Research®*, *47*(4), 213-221. doi:10.1007/s11999-015-4573-6

Kassen, M. (2020). E-participation actors: understanding roles, connections, partnerships. *Knowledge Management Research & Practice*, *18*(1), 16-37, doi:10.1080/14778238.2018.1547252

Kaushik, A. K., & Rahman, Z. (2015). Innovation adoption across self-service banking technologies in India. *International Journal of Bank Marketing*, *33*, 96-121. doi:10.1108/IJBM-01-2014-0006

Kelly, P., Fitzsimons, C., & Baker, G. (2016). Should we reframe how we think about physical activity and sedentary behaviour measurement? Validity and reliability

reconsidered. *International Journal of Behavioral Nutrition and Physical Activity*, *13*(4), 44-63. doi:10.1186/s12966-016-0351-4

Khan, A., & Krishnan, S. (2017). Social media enabled e-participation: Review and agenda for future research. *E-service Journal*, *10*(2), 45-75. doi:10.2979/eservicej.10.2.03

Khan, N., & Al-Yasiri, A. (2016). Framework for cloud computing adoption: A roadmap for smes to cloud migration. *International Journal on Cloud Computing: Services and Architecture*, *5*, 1-15. doi:10.5121/ijccsa.2015.5601

Kharuddin, S., Foong, S. Y., & Senik, R. (2015). Effects of decision rationality on ERP adoption extensiveness and organizational performance. *Journal of Enterprise Information Management*, *28*, 658-679. doi:10.1108/JEIM-02-2014-0018

Kimani, J. G. (2017). Challenges facing integration and the use of ICT in the management of country governments in Kenya. *Journal of Information Technology*, *1*(1), 1-11. Retrieved from https://stratfordjournals.org/journals/index.php/Journal-of-Information-and-Techn/article/view/5

Kornbluh, M. (2015). Combatting challenges to establishing trustworthiness in qualitative research. *Qualitative Research in Psychology*, *12*(4), 397-414. doi:10.1080/14780887.2015.1021941

Kumar, R., Sachan, A., & Mukherjee, A. (2018). Direct vs indirect e-government adoption: An exploratory study. *Digital Policy, Regulation, and Governance*, *20*(2), 149-162. doi:10.1108/DPRG-07-2017-0040

Lah, U., Lewis, J., & Šumak, B. (2020). Perceived usability and the modified technology acceptance model. *International Journal of Human–Computer Interaction, 36*(13), 1216-1230. doi:10.1080/10447318.2020.1727262

Lai, P. C. (2017). The literature review of technology adoption models and theories for the novelty technology. *Journal of Information Systems and Technology Management, 14*(1), 21-38. doi:10.4301/S1807-17752017000100002

Lancaster, K. (2017). Confidentiality, anonymity, and power relations in elite interviewing: Conducting qualitative policy research in a politicized domain. *International Journal of Social Research Methodology, 20*(1), 93-103. doi:10.1080/13645579.2015.1123555

Lappi, T. M., Aaltonen, K., & Kujala, J. (2019). The birth of an ICT project alliance. *International Journal of Marketing Projects in Business*, *12*(2), 325-355. doi:10.1108/IJMPB-02-2018-0036

Larson, J., & Larson, L. (2019). Integration, application, and importance of collaboration in sustainable project management. *Sustainability*, *12*(2), 585. doi:10.3390/su12020585

Laugasson, E., Quaicoe, J. S., Jeladze, E., & Jesmin, T. (2016). Bridging digital divide in schools in developing countries: perceptions of teachers of free software opportunities. In international conference on learning and collaboration technologies. Retrieved from https://scholar.google.com/citations?user=U3vT5wkAAAAJ&hl=en

Lazim, D., Shah, Z. A., Saedudin, R., & Kasim, S. (2018). Information management and PSM evaluation system. *International Journal of Engineering & Technology, 7*(1.6), 17-19. doi:10.14419/ijet.v7i1.6.12318

Lee, D., Shin, J., & Lee, S. (2015). Network management in the era of convergence: Focusing on application-based quality assessment of Internet access service. *Telecommunications Policy, 39,* 705-716. doi:10.1016/j.telpol.2015.07.005

Leite, E., Pahlberg, C., & Aberg, S. (2018). The cooperation-competition interplay in the ICT industry. *Journal of Business & Industrial Marketing, 33*(4), 495-505. doi:10.1108/JBIM-02-2017-0038

Leung, L. (2015). Validity, reliability, and generalizability in qualitative research. *Journal of Family Medicine and Primary Care, 4*(3), 324-327. doi:10.4103/2249-4863.161306

Levius, S., Safa, M., & Weeks, K. (2018). Information and communication technology strategies to improve international competitiveness in the wholesale and retail trade sector. *International Journal of Business and Globalization (IJBG), 20*(1), 99-120. doi:10.1504/IJBG.2018. 088680

Lewis, S. (2015). Qualitative inquiry and research design: Choosing among five approaches. *Health Promotion Practice, 16*(4), 473-475. doi:10.1177/1524839915580941

Liao, Y., Deschamps, F., Loures, E. F. R., & Ramos, L. F. P. (2017). Past, present and future of industry 4.0: A systematic literature review and research agenda

proposal. *International Journal of Production Research, 55*, 3609-3629. doi:10.1080/00207543.2017.1208576

Lim, Y. J., Osman, A., Salahuddin, S. N., Romle, A. R., & Abdullah, S. (2016). Factors influencing online shopping behavior: The mediating role of purchase intention. *Procedia Economics and Finance, 35*, 401-410. Retrieved from https://doi.org/10.1016/S2212-5671(16)00050-2

Lin, H., Lin, S., Yeh, C., & Wang, Y. (2016). Measuring mobile learning readiness: Scale development and validation. *Internet Research, 26*(1), 265-287. doi:10.1108/IntR-10-2014-0241

Lynch, E., Mudge, A., Knowles, S., Kitson, A., Hunter, S., & Harvey, G. (2018). There is nothing so practical as a good theory: A pragmatic guide for selecting theoretical approaches for implementation projects. *BMC Health Services Research, 8*(1). doi:10.1186/s12913-018-3671-z

Macduff, C., Stephen, A., & Taylor, R. (2016). Decision precision or holistic heuristic: Insights on on-site selection of student nurses and midwives. *Nurse Education in Practice, 16*(1), 40-46. doi:10.1016/j.nepr.2015.06.008

Magsamen-Conrad, K., Dillon, J. M., Verhoff, C. B., & Faulkner, S. (2018). Online health-information seeking among older populations: Family influences and the role of the medical professional. *Journal of Health Communication.* 1-13. doi:10.1080/10410236.2018.1439265

Magsamen-Conrad, K., Dillon, J. M., Verhoff, C. B., & Joa, C. Y. (2019). Toward a theory of healthIT adoption across the lifespan: Findings from five years in the Community. *Journal of Health Communication*. 1-14. doi:10.1080/10410236.2018.1563027

Mahardika, H., Thomas, D., & Japutra, M. T. E. (2019). Predicting consumers' trial/adoption of new technology: Revisiting the behavioral expectations – behavioral intentions debate. *International Review of Retail, Distribution and Consumer Research, 29*(1), 99-117. doi:10.1080/09593969.2018.1537192

Maity, M., Bagchi, K., Shah, A., & Misra, A. (2019). Explaining normative behavior in information technology use. *Information Technology & People, 32*(1), 94-117. Retrieved from https://doi.org/10.1108/ITP-11-2017-0384

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies. *Qualitative Health Research, 26*(13), 1753-1760. doi:10.1177/1049732315617444

Manen, M. V. (2017). Phenomenology and meaning attribution. *Indo-Pacific Journal of Phenomenology, 17*(1), 1-12. doi:10.1080/20797222.2017.1368253

Manoharan, A. P., & Ingrams, A. (2018). Conceptualizing e-government from local government perspectives. *State and Local Government Review, 50*(1), 56-66. doi:10.1177/0160323X18763964

Marangunić, N., & Granić, A. (2015). Technology acceptance model: A literature review from 1986 to 2013. *Universal Access in the Information Society, 14*(1), 81-95. Retrieved from https://doi.org/10.1007/s10209-014-0348-1

Marciniak, R. (2018). Quality assurance for online higher education programmes: Design and validation of an integrative assessment model applicable to Spanish universities. *International Review of Research in Open and Distance Learning, 19*(2), 126-154. Retrieved from https://doi.org/10.19173/irrodl.v19i2.3443

Markelov, K. A., Polyanskaya, E. V., Mineva, O. K., & Abbasov, A. M. (2020). Research and educational centers as a matrix of institutional collaboration between business, science, and education in the context of digital transformation in society. *Advances in Economics, Business and Management Research, 139,* 1-5. doi:10.2991/aebmr.k.200509.004

Marshall, C., & Rossman, G. (2016). *Designing qualitative research* (6th ed.). Thousand Oaks, CA: Sage.

Martinus, K., & Hedgcock, D. (2015). The methodological challenge of cross-national qualitative research: Comparative case study interviews in Australia and Japan. *Qualitative Research Journal, 15*(3), 373-386. doi:10.1108/qrj-07-2013-0046

Mayasari, I., Hendrowati, R., Sofia, A. I., & Jakarta, I. (2017). Implementation of e-government through implementation of technology acceptance model. *Journal of Applied Management, 15*(4), 659-669. Retrieved from https://pdfs.semanticscholar.org/ec60/ab013c3db1d4a64ffc105a5b4fdb7eb29471.pdf

McCarthy, L., & Muthuri, J. N. (2018). Engaging fringe stakeholders in business and society research: Applying visual participatory research methods. *Business & Society, 57,* 131-173. doi:10.1177/0007650316675610

McCusker, K., & Gunaydin, S. (2015). Research using qualitative, quantitative or mixed methods and choice based on the research. *Perfusion, 30*(7), 537-542. doi:10.1177/0267659114559116

McIntosh, M. J., & Morse, J. M. (2015). Situating and constructing diversity in semistructured interviews. *Global Qualitative Nursing Research, 2,* 233339361559767. doi:10.1177/2333393615597674

McNeil, M. R., Pratt, S. R., Szuminsky, N., Sung, J. E., Fossett, T. R. D., Fassbinder, W., & Lima, K. Y. (2015). Reliability and validity of the computerized revised token test: Comparison of reading and listening versions in persons with and without aphasia. *Journal of Speech, Language & Hearing Research, 58,* 111-124. doi:10.1044/2015_JSLHR-L-13-0030

Mensah, I. F. (2019). Impact of government capacity and e-government performance on the adoption of e-government services. *International Journal of Public Administration, 4,* 303-311. doi:10.1080/01900692.2019.1628059

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation*. Hoboken, NJ: John Wiley & Sons.

Michaelson, V., McKerron, M., & Davison, C. (2015). Forming ideas about health: A qualitative study of Ontario adolescents. *International Journal of Qualitative Studies on Health and Well-Being, 10*(3), 76-93. doi:10.3402/qhw.v10.27506

Mikkelsen, M. F. (2018). Projects, success, and complexity. International project management association research conference 2017, UTS ePRESS, Sydney: NSW, 1-13. doi:org/10.5130/pmrp.ipmarc2017.5618

Min, S. (2017). Online vs. face-to-face deliberation: Effects on civic engagement. *Journal of Computer-Mediated Communication, 12*(4), 1369-1387. doi:10.1111/j.1083-6101.2007.00377.x

Mittal, S. (2019). How organizations implement new practices in dynamic context: Role of deliberate learning and dynamic capabilities development in health care units. *Journal of Knowledge Management*, *23*(6), 1176-1195. doi:10.1108/JKM-11-2018-0686

Mohammed, F., Alzahrani, A., & Alfarraj, O. (2018). Cloud computing fitness for e-government implementation: Importance-performance analysis. *IEEE Access*, *6*, 1236-1248. doi:10.1109/ACCESS.2017.2778093

Molino, M., Cortese, C., & Ghisllieri, C. (2020). The promotion of technology acceptance and work engagement in industry 4.0: From personal resources to information and training. *International Journal of Environmental Research and Public Health, 17*(7), 2438. doi:10.3390/ijerph17072438

Monahan, T., & Fisher, J. A. (2015). Strategies for obtaining access to secretive or guarded organizations. *Journal of Contemporary Ethnography, 44,* 709-736. doi:10.1177/0891241614549834

Moon, D. (2019). Triangulation: A method to increase validity, reliability, and legitimation in clinical research. *Journal of Emergency Nursing, 45*(1), 103-105. Retrieved from https://doi.org/10.1016/j.jen.2018.11.004

Morgan-Trimmer, S., & Wood, F. (2016). Ethnographic methods for process evaluations of complex health behaviour interventions. *Trials*, *17*(232), 1-11. doi:10.1186/s13063-016-1340-2

Morse, A. L., & McEvoy, C. D. (2014). Qualitative research in sport management: Case study as a methodological approach. *Qualitative Report, 19*(17), 1-13. Retrieved from http://www.nova.edu/ssss/QR

Morse, J. M. (2015a). Critical analysis of strategies for determining rigor in qualitative inquiry. *Qualitative Health Research, 25*(9), 1212-1222. doi:10.1177/1049732315588501

Morse, J. M. (2015b). Analytic strategies and sample size. *Qualitative Health Research, 25*, 1317-1318. doi:10.1177/1049732315602867

Mortenson, M. J., & Vidgen, R. (2016). A computational literature review of the technology acceptance model. *International Journal of Information Management, 36*(6), 1248–1259. Retrieved from https://doi.org/10.1016/j.ijinfomgt.2016.07.007

Moser, A., & Korstjens, I. (2018). Series: Practical guidance to qualitative research. Part 3 Sampling, data collection and analysis. *European Journal of General Practice, 24*(1), 9-18. doi:10.1080/13814788.2017.1375091

Moss, M., Good, V. S., Gozal, D., Kleinpell, R., & Sessler, C. N. (2016). An official critical care societies collaborative statement: Burnout syndrome in critical care health care professionals: a call for action. *American Journal of Critical Care, 25*(4), 368-376. doi:10.1097/CCM.0000000000001885

Mota, J. M., Ruiz-Rube, I., Dodero, J. M., & Arnedillo-Sánchez, I. (2018). Augmented reality mobile app development for all. *Computers & Electrical Engineering, 65,* 250-260. Retrieved from https://doi.org/10.1016/j.compeleceng.2017.08.025

Motak, L., Neuville, E., Chambers, P., Marmoiton, F., & Moneger, F. (2017). Antecedent variables of intention to use an autonomous shuttle: Moving beyond TAM and TPB? *Revue Européenne de Psychologie Appliquée, 67*(5), 269-278. doi:10.1016/j.erap.2017.06.001

Moylan, C. A., Derr, A. S., & Lindhorst, T. (2015). Increasingly mobile: How new technologies can enhance qualitative research. *Qualitative Social Work, 14*(1), 36-47. doi:10.1177/1473325013516988

Munthe-Kaas, H., Nokleby, H., & Nguyen, L. (2019). Systematic mapping of checklists for assessing transferability. *Systematic Review, 8*(22), 1-16. doi:10.1186/s13643-018-0893-4

Muriithi, P., Horner, D., & Pemberton, L. (2016). Factors contributing to adoption and use of information and communication technologies within research collaborations in Kenya. *Information Technology for Development, 22*(1), 84-100. Retrieved from http://dx.doi.org/10.1080/02681102.2015.1121856

Naber, A. (2015). Qualitative experiment as a participating method of innovation research. *Historical Social Research 40*, 233-257. doi:10.12759/hsr.40.2015.3.233-257

Nagasaka, K., Bocher, M., & Krott, M. (2016). Are forest researchers only scientists? Case studies on the roles of researchers in Japanese and Swedish forest policy178 processes. *Forest Policy & Economics, 70*, 147-154. doi:10.1016/j.forpol.2016.06.006

Naidu, T., & Prose, N. (2018). Re-envisioning member checking and communication results as accountability practice in qualitative research: A South African community -based organization example. *FQS: Forum Qualitative Sozialforschung, 19(*3), 1-15. Retrieved from http://www.qualitative-research.net/index.php/fqs/article/view/3153/4315

Namey, E. E., & Trotter, R. T. (2015). Qualitative research methods. In G. S. Guest & E. E. Namey (Eds.), *Public health research methods*, 443-482. New York, NY: Sage.

Napitupulu, D. (2017). A conceptual model of e-government adoption in Indonesia. *International Journal on Advanced Science, Engineering and Information*

*Technology, 7*(4), 1471-1478. Retrieved from http://dx.doi.org/10.18517/ijaseit.7.4.2518

Nascimento, A. M., & da Silveira, D. S. (2017). A systematic mapping study on using social media for business process improvement. *Computers in Human Behavior, 73*, 670-675. Retrieved from https://doi.org/10.1016/j.chb.2016.10.016

Natow, R. (2019). The use of triangulation in qualitative studies employing elite interviews. *Qualitative research*, 1-14. doi:10.1177/1468794119830077

Nelson, J. (2017). Using conceptual depth criteria: Addressing the challenge of reaching saturation in qualitative research. *Qualitative Research, 17*, 554-570. doi:10.1177/1468794116679873

Neubauer, B. E., Witkop, C. T., & Varpio, L. (2019). How phenomenology can help us learn from the experiences of others. *Perspectives on Medical Education, 8*(2), 90-97. doi:10.1007/s40037-019-0509-2

Niederhauser, D. S., & Lindstorm, D. L. (2017). Instructional technology integration models and frameworks: Diffusion, competencies, attitudes, and dispositions. *Handbook of Information Technology in Primary and Secondary Education*, 1-21. doi.org/10.1007/978-3-319-53803-7_23-1

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-Based Nursing, 18*(2), 34-35. doi:10.1136/eb-2015-102054

Nogueira, U. (1998). The integration movement in the Caribbean at crossroads: Towards a new approach of integration. *Iberoamericana – Nordic Journal of Latin*

*American and Caribbean Studies*, *28*(1-2), 161-183. Retrieved from https://www.iberoamericana.se/articles/abstract/10.16993/ibero.269/

Oates, J. (2015). Use of Skype in interviews: The impact of the medium in a study of mental health nurses. *Nurse Researcher*. *22*(4), 13-17. doi:10.7748/nr.22.4.13.e1318

Oderanti, F. O., & Li, F. (2018). Commercialization of ehealth innovations in the market of the UK healthcare sector: A framework for a sustainable business model. *Psychology & Marketing, 35*(2*)*, 120-137. doi:10.1002/mar.21074

O'Donnell, P., Tierney, E., Austin, O., Nurse, D., & MacFarlane, A. (2016). Exploring levers and barriers to accessing primary care for marginalised groups and identifying their priorities for primary care provision: A participatory learning and action research study. *International Journal for Equity in Health, 15*(1), 197-212. doi:10.1186/s12939-016-0487-5

Okantey, M., & Addo, H. H. (2016). Effect of theoretical and institutional factors on the adoption of e-learning. *European Scientific Journal, 12*(16), 1-12. doi:10.19044/esj.2016.v12n16p475

Okundaye, K. E. (2016). Adoption of information and communication technology in Nigerian small-to medium-size enterprises (Doctoral dissertation, Walden University). Retrieved from https://scholarworks.waldenu.edu/dissertations/2679/

Oliveira, M., Bitencourt, C., Santos, A. C., & Teixeira, E. K. (2016). Thematic content analysis: Is there a difference between the support provided by the MaxQDA and

Nvivo software packages. *Brazilian Journal of Management/Revista De Administração Da UFSM, 9*(1), 72-82. doi:10.5902/1983465911213

Olivo, J. F. L., Guzman, J. G., Colomo-Palacios, R., & Stantchev, V. (2016). IT Innovation strategy: Managing the implementation communication and its generated knowledge through the use of an ICT tool. *Journal of Knowledge Management, 20*(3), 512-533. Retrieved from https://doi.org/10.1108/JKM-06-2015-0217

Oltmann, S. (2016). Qualitative interviews: A methodological discussion of the interviewer and respondent contexts. *FQS: Forum Qualitative Sozialforschung, 17*(2), 1-16. Retrieved from http://dx.doi.org/10.17169/fqs-17.2.2551

Onwuegbuzie, A. J., & Weinbaum, R. K. (2017). A framework for using qualitative comparative analysis for the review of literature. *Qualitative Report, 22*, 359-372. Retrieved from www.nova.edu/tqr

Ooms, W., Bell, J., & Kok, R. A. (2015). Use of social media in inbound open innovation: Building capabilities for absorptive capacity. *Creativity and Innovation Management, 24*(1), 136–150. Retrieved from https://doi.org/10.1111/caim.12105

Orange, A. (2016). Encouraging reflexive practices in doctoral students through research journals. *Qualitative Report, 21*(12), 2176-2190. Retrieved from https://nsuworks.nova.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=2450&context=tqr/

Pacho, T. O. (2015). Exploring participants' experiences using case study. *International Journal of Humanities and Social Science, 5*(4), 44-53. Retrieved from https://www.researchgate.net/publication/280134008

Palaco, I., Park, M. J., Kim, S. K., & Rho, J. J. (2018). Public-private partnerships for e-government in developing countries: An early stage assessment framework. *Evaluation and Program Planning, 72*(C), 205-218. doi:10.1016/j.evalprogplan.2018.10.015

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Adm Policy Ment Health, 42*(15), 533-544. doi:10.1007/s10488-013-0528-y

Palojoki, S., Pajunen, T., Saranto, K., & Lehtonen, L. (2016). Electronic health record-related safety concerns: A cross-sectional survey of electronic health record users. *JMIR medical informatics, 4*(2), e13. doi:10.2196/medinform.5238

Palvia, P., Baqir, N., & Nemati, H. (2017). ICT for socio-economic development: A citizens' perspective. *Information & Management, 55*(2), 160-176. Retrieved from https://doi.org/10.1016/j.im.2017.05.003

Pappas, I. O., Kourouthanassis, P. E., Giannakos, M. N., & Lekakos, G. (2017). The interplay of online shopping motivations and experiential factors on personalized e-commerce: A complexity theory approach. *Telematics and Informatics, 34*(5), 730-742. doi:10.1016/j.tele.2016.08.021

Park, E., Hwang, B., Ko, K., & Kim, D. (2017). Consumer acceptance analysis of home energy management system. *Sustainability, 9*(12), 1-15. doi:10.3390/su9122351

Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). Thousand Oaks, CA: Sage Publications.

Pedersen, K. (2018). E-government transformations: Challenges and strategies. *Transforming Government: People, Process and Policy, 12(*1), 84-109. Retrieved from https://doi.org/10.1108/TG-06-2017-0028

Pérez, P. K. V., & Fernández, J. T. (2018). Competencias digitales en docentes de educación superior: Niveles de Dominio y necesidades formativas. *Revista Digital de Investigación En Docencia Universitaria*, *12*(2), 59-87. doi:10.19083/ridu.2018.712

Peters, K., & Halcomb, E. (2015). Interviews in qualitative research: A consideration of two different issues in the use of interviews to collect research data. *Nurse Researcher, 22*, 6-7. doi:10.7748/nr.22.4.6.s2

Petrova, E., Dewing, J., & Camilleri, M. (2016). Confidentiality in participatory research: Challenges form one study. *Nursing Ethics*, *23*, 442-454. doi:10.1177/0969733014564909

Pietrobelli, C., & Puppato, F. (2016). Technology foresight and industrial strategy. *Technological Forecasting and Social Change*, *110*, 117-125. doi:10.1016/j.techfore.2015.10.021

PMI, (2017). A guide to the project management body of knowledge: *PMBOK*® Guide – Sixth Edition (2017). Retrieved from https://www.pmi.org/pmbok-guide-standards/foundational/pmbok

Podmetina, D., Volchek, D., & Smirnova, M. (2015). The relationship between innovation and internationalization in a turbulent environment. *International Journal of Technology Marketing*, *10*, 326-326. doi:10.1504/ijtmkt.2015.070648

Podsakoff, P. M., & Podsakoff, N. P. (2018). Experimental designs in management and leadership research: Strengths, limitations, and recommendations for improving publishability. *Leadership Quarterly, 30*(1), 11-33. doi:10.1016/j.leaqua.2018.11.002

Pogrund, R. L., Darst, S., & Munro, M. P. (2015). Initial validation study for a scale used to determine service intensity for itinerant teachers of students with visual impairments. *Journal of Visual Impairment & Blindness, 109*(6), 433. doi:10.1177/0145482X1510900602

Pourvakhshoori, N., Norouzi, K., Ahmadi, F., Hosseini, M., & Khankeh, H. (2017). Nurse in limbo: A qualitative study of nursing in disasters in Iranian context. *PloS one, 12*(7), e0181314. doi:10.1371/journal.pone.0181314

Powell, B. J., Waltz, T. J., Chinman, M. J., Damschroder, L. J., Smith, J. L., Matthieu, M. M., … & Kirchner, J. (2015). A refined compilation of implementation strategies: Results from expert recommendations for implementing change (ERIC) project. *Implementation Science, 10*(1), 1-14. doi:10.1186/s13012-015-0209-1

Pramanik, J., Sarkar, B., & Kandar, S. (2017). Impact of IT on rural development: Perspective of developing countries. *American Journal of Rural Development*. *5*(4), 117-120. doi:10.12691/ajrd-5-4-5

Quadri, N. N., & Ahmad, N. (2019). Critical success factors (CSF) for cloud-based e-learning. *International Journal of Emerging Technologies in Learning (IJET), 14*(1), 140-149. doi:10.3991/ijet.v14i01.9170

Quartiroli, A., Knight, S. M., Etzel, E. F., & Monaghan, M. (2017). Using Skype to facilitate team-based qualitative research, including the process of data analysis. *International Journal of Social Research Methodology, 20*(6), 659-666. doi:10.1080/13645579.2016.1275371

Rahamat, R. (2019). Designing mobile learning: Empirical journey to reality in Malaysian secondary school context. *Journal of English Education, Literature, and Culture, 4*(1), 13-24. doi:10.30659/e.4.1.13-24

Rahayu, R., & Day, J. (2015). Determinant factors of e-commerce adoption by SMEs in developing country: Evidence from Indonesia. *Procedia - Social and Behavioral Sciences, 195*, 142-150. doi:10.1016/j.sbspro.2015.06.423

Ramírez-Correa, P. E., Arenas-Gaitán, J., & Rondán-Cataluña, F. J. (2015). Gender and acceptance of e-learning: A multi-group analysis based on a structural equation model among college students in Chile and Spain. *PLoS ONE*, *10*(10), e0140460. doi:10.1371/journal.pone.0140460

Ramlo, S. (2015). Mixed method lessons learned from 80 years of Q methodology. *Journal of Mixed Methods Research, 10*(1), 28-45. doi:10.1177/1558689815610998

Rana, N., Dwivedi, Y., Lal, B., Williams, M., & Clement, M. (2015). Citizens' adoption of an electronic government system: Towards a unified view. *Information Systems Frontiers, 19*(3), 549-568. doi:10.1007/s10796-015-9613-y

Rana, N. P., Dwivedi, Y. K., & Williams, M. D. (2015). A meta-analysis of existing research on citizen adoption of e-government. *Information Systems Frontiers, 17*(3), 547-563. doi:10.1007/s10796-013-9431-z

Rana, T., Hoque, Z., & Jacobs, K. (2019). Public sector reform implications for performance measurement and risk management practice: insights from Australia. *Public Money & Management, 39*(1), 37-45. doi:10.1080/09540962.2017.1407128

Raskind, L. G., Shelton, R. C., Comeau, D. L., Cooper, H. L. F., Griffith, D. M., & Kegler, M. C. (2019). A review of qualitative data analysis practices in health education and health behavior research. *Health Education & Behavior, 46*(1), 32-39. doi:10.1177/1090198118795019

Ray, S. (2017). A street child's perspective: A grounded theory study of how street children experience and cope with grief. *Qualitative Report, 22*(1), 291-308. Retrieved from https://nsuworks.nova.edu/tqr/vol22/iss1/17/

Razmak, J., & Bélanger, C. (2018). Using the technology acceptance model to predict patient attitude toward personal health records in regional communities. *Information Technology & People*, *31*(2), 306-326. doi:10.1108/ITP-07-2016-0160

Resnik, D. (2015). Bioethical issues in providing financial incentives to research participants. *Medicolegal and Bioethics, 5*(1), 35-41. doi:10.2147/MB.S70416

Revinova, S., & Chavarry, D. (2020). E-government and government support for the digital economy in Latin America and the Caribbean. *Advances in Economics, Business and Management Research, 138*(1), 1-9. doi:10.2991/aebmr.k.200502.166

Reyes, V. (2020). Ethnographic toolkit: Strategic positionality and researchers' visible and invisible tools in field research. *Ethnography, 21*(2), 220-240. doi:10.1177/146613811880512

Rghioui, A., & Oumnad, A. (2017). Internet of things: Surveys for measuring human activities from everywhere. *International Journal of Electrical and Computer Engineering, 7*(5), 2474–2482. doi:10.11591/ijece.v7i5.pp2474-2482

Rimando, M., Brace, A., Namageyo-Funa, A., Parr, T. L., Sealy, D., Davis, T. L., … Christiana, R. W. (2015). Data collection challenges and recommendations for early career researchers. *Qualitative Report*, *20*(12), 2025-2036. Retrieved from http://nsuworks.nova.edu/tqr/vol20/iss12/8

Robinson, R., Cotton, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., … Stern, M. J. (2015). Digital inequalities and why they matter. *Information, Communication, & Society, 18*, 569–582. doi:10.1080/1369118X.2015.1012532

Rodrigues, H., Almeida, F., Figueiredo, V., & Lopes, S. (2019). Tracking e-learning through published papers: A systematic review. *Computers and Education, 136*(1), 87-98. dio:10.1016/j.compedu.2019.03.007

Rondan-Cataluna, F. J., Arenas-Gaitan, J., & Ramirez-Correa, P. E. (2015). A comparison of the different versions of popular technology acceptance models: A non-linear perspective. *Kybernetes, 44*, 788-805. doi:10.1108/K-09-2014-0184

Rooney, T., Lawlor, K., & Rohan, E. (2016). Telling tales: Storytelling as a methodological approach in research. *Electronic Journal of Business Research Methods, 14*, 147-156. Retrieved from http://www.ejbmr.com

Rosenberg, D. (2018). Use of e-government services in a deeply divided society: A test and an extension of the social inequality hypotheses. *New Media & Society, 21*(2), 464-482. doi:10.1177/1461444818799632

Roulston, K., & Shelton, S. A. (2015). Reconceptualizing bias in teaching qualitative research methods. *Qualitative Inquiry, 21*, 332-342. doi:10.1177/1077800414563803

Roztocki, N., Soja, P., & Weistroffer, H. R. (2019). The role of information and communication technologies in socioeconomic development: towards a multi-

dimensional framework. *Information Technology for Development, 25*(2), 171-183. doi:10.1080/02681102.2019.1596654

Rubalcaba, L., Aboal, D., & Garda, P. (2016). Service innovation in developing economies: Evidence from Latin America and the Caribbean. *Journal of Development Studies, 52*(5), 607-626. doi:10.1080/00220388.2015.1093118

Saba, M., Saba, P. B., & Harfouche, A. (2018). Hidden facets of IT projects are revealed only after deployment: The case of French agricultural cooperatives. *Information Technology & People, 31*(1), 239-255. doi:10.1108/ITP-06-2016-0144

Salas, A., & Moller, L. (2015). The value of voice thread in online learning: Faculty perceptions of usefulness. *Quarterly Review of Distance Education*, *16*(1), 11-24, 75-76. Retrieved from https://www.questia.com/library/p62115/quarterly-review-of-distance-education/i4011295/vol-16-no-1-2015

Sambhava, K., Nautiyal, P., & Jain, J. (2016). Model based phenomenological and experimental investigation of nanoindentation creep in pure Mg and AZ61 alloy. *Materials & Design, 105*, 142-151. doi:10.1016/j.matdes.2016.05.036

Sampson, H., & Johannessen, I. A. (2019). Turning on the tap: The benefits of using 'real life' vignettes in qualitative research interviews. *Qualitative Research,* 1-7. doi:10.1177/1468794118816618

Sanjari, M., Bahramnezhad, F., Fomani, F., Sho-ghi, M., & Cheraghi, M. (2014). Ethical challenges of researchers in qualitative studies: The necessity to develop a

specific guideline. *Journal of Medical Ethics and History of Medicine, 7*, 2-6. Retrieved from https://www.ncbi.nlm.Nih.gov/labs/journals/j-med-ethics-histmed/

Sarma, S. K. (2015). Qualitative research: Examining the misconceptions. South Asian, *Journal of Management, 22*, 176-191. Retrieved from http://www.sajmamdisa.org

Sarmento, V. P., Gysels, M., Higginson, I. J., & Gomes, B. (2017). Home palliative care works: But how? A meta-ethnography of the experiences of patients and family caregivers. *BMJ Supportive & Palliative Care.* Advance online publication, 7*(4).* doi:10.1136/bmjspcare-2016-001141.

Saunders, B., Kitzinger, J., & Kitzinger, C. (2015). Anonymising interview data: Challenges and compromise in practice. *Qualitative Research, 15*(5), 616-632. doi:10.1177/1468794114550439

Savage, T. N., & McIntosh, A. S. (2016). Tackling reliability and construct validity: The systematic development of a qualitative protocol for skill and incident analysis. *Journal of Sports Sciences, 35*(5), 449-456. doi:10.1080/02640414.2016.1172722

Schmid, R., & Petko, D. (2019). Does the use of educational technology in personalized learning environments correlate with self-reported digital skills and beliefs of secondary-school students? *Computers and Education, 136(*1), 75-86. doi:10.1016/j.compedu.2019.03.006

Schoemaker, P., Heaton, S., & Teece, D. (2018). Innovation, dynamic capabilities, and leadership. *California Management Review, 6*(1), 15-42. doi:10.1177/0008125618790246

Scuotto, V., Del Giudice, M., & Omeihe, K. O. (2017). SMEs and mass collaborative knowledge management: Toward understanding the role of social media networks. *Information Systems Management, 34*(3), 280-290. Retrieved from https://www.tandfonline.com/doi/abs/10.1080/10580530.2017.1330006?journalCode=uism20

Seal, W., & Mattimoe, R. (2016). A pragmatic constructivist approach to accounting practice and research. *Qualitative Research in Accounting & Management, 13*, 330-349. doi:10.1108/QRAM-06-2015-0055

Sepasgozar, F. M. E., Ramzani, U., Ebrahimzadeh, S., Sargolzae, S., & Sepasgozar, S. (2019). Technology acceptance in e-governance: A case of a financial organization. *Journal of Risk and Financial Management, 13*(7), 138. doi:10.3390/jrfm13070138

Servaes, J., & Hoyng, R. (2017). The tools of social change: A critique of techno-centric development and activism. *New Media & Society, 19*, 255-271. doi:10.1177/1461444815604419

Shahin, D. (2017). Green information technology adoption: Influencing factors and extension of theory of planned behavior. *Social Responsibility Journal, 13*(2), 292-306. doi:10.1108/SRJ-05-2016-0064

Shao, C. (2019). An empirical study on the identification of driving factors of satisfaction with online learning based on TAM. *Advances in Economics, Business and Management Research, 110*(1), 1-7. doi:10.2991/aebmr.k.191225.205

Sharma, S., & Aniket, G. C. (2014). A qualitative study on evolution of relationships between third-party logistics and customers into strategic alliances. *Strategic Outsourcing: An International Journal, 7*(1), 2-17. doi:10.1108/SO-08-2013-0015

Sharma, S. K., Al-Badi, A. H., Govindaluri, S. M., & Al-Kharusi, M. H. (2016). Predicting motivators of cloud computing adoption: A developing country perspective. *Computers in Human Behavior,* 6261-6269. doi:10.1016/j.chb.2016.03.073

Shtudiner, Z., Klein, G., & Kantor, J. (2017). Who is responsible for economic failures? Self-serving bias and fundamental attribution error in political context. *Quality & Quantity, 51*(1), 335-350. doi:10.1007/s11135-015-0307-9

Shuib, L., Yadegaridehkordi, E., & Ainin, S. (2019). Malaysian urban poor adoption of e-government applications and their satisfaction. *Cogent Social Sciences, 5*(1), 1-8. doi:10.1080/23311886.2019.1565293

Sibanda, M., & von Solms, R. (2018). Devising a strategy for IT governance implementation in municipalities. A case study of South Africa. *Electronic Journal of Information Systems in Developing Countries, 85*(2), 1-29. doi:10.1002/isd2.12067

Siddique, W. (2016). Critical success factors affecting e-government policy implementation in Pakistan. *eJournal of eDemocracy and Open Government, 8*(1), 102-126. doi:10.29379/jedem.v8i1.398

Silverman, D. (Ed.) (2016). *Qualitative research*. London, UK: Sage Publications.

Simpson, A., & Quigley, C. F. (2016). Member checking process with adolescent students: Not just reading a transcript. *Qualitative Report, 21*(2), 377-392. Retrieved from https://nsuworks.nova.edu/tqr/vol21/iss2/12/

Singh, H., Grover, P., Kar, A. K., & Llavarasan, V. (2020). Review of performance assessment frameworks of e-government projects. *Transforming Government: People, Process and Policy.* doi:10.1108/TG-02-2019-0011

Singh, K. D. (2015a). Creating your own qualitative research approach: Selecting, integrating and operationalizing philosophy, methodology and methods. *Vision, 19*(2), 132-146. doi:10.1177/0972262915575657

Singh, S. (2015b). Hello limitations! The paradoxical power of limits in scientific writing. *Indian Journal of Dermatology, Venereology, & Leprology, 81*, 4-6. doi:10.4103.0378-6323.148555

Soni, V., Dey, P. D., Anand, R., Malhotra, C., & Banwet, D. K. (2017). Digitizing grey portions of e-governance. *Transforming Government: People, Process and Policy, 11*(3), 419-455. doi:10.1108/TG-11-2016-0076

Sorsa, M., Kiikkala, I., & Astedt-Kurki, P. (2015). Bracketing as a skill in conducting unstructured qualitative interviews. *Nurse Researcher. 22*(4), 8-12. doi:10.7748/nr.22.4.8.e1317

Spillane, A., Larkin, C., Corcoran, P., Matvienko-Sikar, K., & Arensman, E. (2017). What are the physical and psychological health effects of suicide bereavement on

family members? Protocol for an observational and interview mixed-methods study in Ireland. *BMJ Open, 7*(3), 1-8. doi:10.1136/bmjopen-2016-014707

Standlee, A. (2017). Digital ethnography and youth culture: Methodological techniques and ethical dilemmas. *Sociological Studies of Children and Youth, 22,* 325-348. doi:10.1108/S1537-466120180000022015

Stewart, H., Gapp, R., & Harwood, I. (2017). Exploring the alchemy of qualitative management research: Seeking trustworthiness, credibility and rigor through crystallization. *Qualitative Report, 22*(1), 1-19. Retrieved from https://nsuworks.nova.edu/tqr/vol22/iss1/1/

Sundqvist, A., & Svärd, P. (2016). Information culture and records management: A suitable match? Conceptualizations of information culture and their application on records management. *International Journal of Information Management, 36*(1), 9-15. doi:10.1016/j.ijinfomgt.2015.08.004

Susanto, T. D., Mira, D. M., & Irmasari, H. (2017). User acceptance of e-government citizen report system (a case study of city113 app). *Procedia Computer Science, 124,* 560-568. doi:10.1016/j.procs.2017.12.190

Taherdoost, H. (2018). A review of technology acceptance and adoption models and theories. *Procedia Manufacturing, 22*, 960-967. doi:10.1016/j.promfg.2018.03.137

Taherdoost, H. (2019). Importance of technology acceptance assessment for successful implementation and development of new technologies. *Global Journal of*

*Engineering Sciences, 1*(3), 1-3. Retrieved from https://irispublishers .com/gjes/pdf/GJES.MS.ID.000511.pdf

Tam, N., Huy, N., Thoa, L., Long, N., Trang, N., Hirayama, K., & Karbwang, J. (2015). Participants' understanding of informed consent in clinical trials over three decades: Systematic review and meta-analysis. *Bulletin of the World Health Organization, 93*(3), 186-198. doi:10.2471/BLT.14.141390

Tatnal, A. (2019). Editorial for EAIT issue 1, 2019. *Education and Information Technologies, 24*(1), 1-11. doi:10.1007/s10639-018-09856-1

Tébar, L. (2017). La función mediadora de la educación. *Revista de la Universidad de La Salle, 70,* 13-32. doi:10.29344/07180772.28.790

Teo, T., & Jarupunphol, P. (2015). Dhammic technology acceptance model (DTAM): Extending the TAM using a condition of attachment in Buddhism. *Journal of Educational Computing Research, 52*(1), 136-151. doi:10.1177/0735633114568859

Thakur, D. (2018). How do ICTs mediate gender-based violence in Jamaica? *Gender & Development, 26*(2), 267-282. doi:10.1080/13552074.2018.1475044

Thomas, D. R. (2016). Feedback from research participants: Are member checks useful in qualitative research? *Qualitative Research in Psychology, 14*(1), 23-41. doi:10.1080/14780887.2016.1219435

Thomas, M. A., Li, Y., & Oliveira, T. (2017). Nuances of development contexts for ICT4D research in least developed countries: An empirical investigation in Haiti. *Telematics and Informatics, 34*(7), 1093-1112. doi:10.1016/j.tele.2017.05.001

Torres, R., & Gerhart, N. (2019). Mobile proximity usage behaviors based on user characteristics. *Journal of Computer Information Systems, 59*(2), 161-170. doi:10.1080/08874417.2017.1320954

Traxler, A. (2018). Learning with mobiles in the digital age. *Pedagogika, 168*(3), 1-18. doi:10.14712/23362189.2018.860

Tsokota, T., von Solms, R., & van Greunen, D. (2017). An ICT strategy for the sustainable development of the tourism sector in a developing country: A case study of Zimbabwe. *The Electronic Journal on Information Systems in Developing Countries, 78*, 1-20. doi:10.1002/j.1681-4835.2017tb00573.x

Twizeyimana, J. D., & Anderson, A. (2019). The public value of e-government – A literature review. *Government Information Quarterly, 36*(2), 167-178. doi:10.1016/j.giq.2019.01.001

Unkovic, C., Sen, M., & Quinn, K. M. (2016). Does encouragement matter in improving gender imbalances in technical fields? Evidence from a randomized controlled trial. *PLoS One, 11*(4), 55-86. doi:10.1371/journal.pone.0151714

Upjohn, M., & Wells, K. (2016). Challenges associated with informed consent in low and low-middle income countries. *Frontiers in Veterinary Science, 3*(92), 1-5. doi:10.3389/fvets.2016.00092

Uys, C., & Pather, S. (2019). A benefits framework for public access ICT4D Programmes. *Electronic Journal of Information Systems in Developing Countries (EJISDC), 86*(2), 1-18. doi:10.1002/isd2.12119

Van Praag, B., & Sanchez, H. S. (2015). Mobile technology in second language classrooms: Insights into its uses, pedagogical implications, and teacher beliefs. *ReCALL: Journal of EUROCALL, 27*(3), 188-203. doi:10.1017/S0958344015000075

Varpio, L., Ajjawi, R., Monrouxe, L. V., O'Brien, B. C., & Rees, C. E. (2017). Shedding the cobra effect: Problematising thematic emergence, triangulation, saturation and member checking. *Medical Education, 51*, 40-50. doi:10.1111/medu.13124

Veldeman, C., Praet, E. V., & Mechant, P. (2017). Social media adoption in business-to-business: IT and industrial companies. *International Journal of Business Communication, 54*(3), 283-305. doi:10.1177/2329488415572785

Verkijika, S. F., & De Wet, L. (2018). E-government adoption in sub-Saharan Africa. *Electronic Commerce Research and Applications, 30*, 83-93. doi:10.1016/j.elerap.2018.05.012

Villa, E., Ruiz, L., Valencia, A., & Picon, E. (2018). Electronic commerce: Factors involved in its adoption from a bibliometric analysis. *Journal of Theoretical and Applied Electronic Commerce Research, 13*(1), 39-70. doi:10.4067/S0718-18762018000100104

Visser, L. M., Bleijenbergh, I. L., Benschop, Y. W. M., Van Riel, A. C. R., & Bloem, B. R. (2016). Do online communities change power processes in healthcare? Using case studies to examine the use of online health communities by patients with Parkinson's disease. *BMJ Open, 6*(11), 1-6. doi:10.1136/bmjopen-2016-012110

Vogl, S. (2018). Integrating and consolidating data in mixed methods data analysis: Examples from focus group data with children. *Journal of Mixed Methods Research*, 1-19. doi:10.1177/1558689818796364

Von Contzen, E., & Alders, M. (2015). Collective experience in narrative: Conclusions and proposals. *Narrative, 23,* 226-229. doi:10.1353/nar.2015.0012

Waddington, H., Sonnenfeld, A., Finetti, J., Gaarder, M., John, D., & Stevenson, J. (2019). Citizen engagement in public services in low-and middle-income countries: A mixed-methods systematic review of participation, inclusion, transparency and accountability (PITA) initiatives. *Systematic Review, 39*(1), 37-45. doi:10.1002/cl2.1025

Wai, I. S. H., Ng, S. S. Y., Chiu, D. K. W., Ho, K. K. W., & Lo, P. (2018). Exploring undergraduate students' usage pattern of mobile apps for education. *Journal of Librarianship and Information Science, 50*(1), 34-47. doi:10.1177/0961000616662699

Walby, K., Marshall, C., & Rossman, G. B. (2015). Designing qualitative research. *Canadian Journal of Sociology, 40,* 399-402. doi:10.17169/fqs-9.3.996

Wall, S. S. (2015). Focused ethnography: A methodological adaptation for social research in emerging contexts. *FQS: Focused Qualitative Sozialforschung, 16*(1), 44-66. doi:10.17169/fqs-16.1.2182

Wallace, M., & Sheldon, N. (2015). Business research ethics: Participant observer perspectives. *Journal of Business Ethics, 128*(2), 267-277. doi:10.1007/s10551-014-2102-2

Wamba, S. F., Bhattacharva, M., Trinchera, L., & Ngai, E. W. T. (2016). Role of intrinsic and extrinsic factors in user social media acceptance within workspace: Assessing unobserved heterogeneity. *International Journal of Information Management, 37*(2), 1-13. doi:10.1016/j.ijinfomgt.2016.11.004

Wang, Y., Hsiao, S. H., Yang, Z., & Hajli, N. (2016). The impact of sellers' social influence on the co-creation of innovation with customers and brand awareness in online communities. *Industrial Marketing Management, 54*, 56–70. doi:10.1016/j.indmarman.2015.12.008

Warkentin, M., Sharma, S., Gefen, D., Rose, G. M., & Pavlou, P. (2018). Social identity and trust in internet-based voting adoption. *Government Information Quarterly, 35*(2), 195-209. doi:10.1016/j.giq.2018.03.007

Watchaton, W., & Krairit, D. (2019). Factors influencing organizational information systems implementation in Thai public universities. *Journal of Systems and Information Technology, 21*(1), 90-121. doi:10.1108/JSIT-07-2017-0054

Webster, P. (2016). Quebec's new e-health records may spur change. *Canadian Medical Association Journal, CMAJ, 188*(4), 251. doi:10.1503/cmaj.109-5225

Weerasinghe, S., & Hindagolla, M. C. B. (2018). Technology acceptance model and social network sites (SNS): A selected review of literature. *Global Knowledge, Memory and Communication, 67*(3), 142-153. doi:10.1108/GKMC-09-2017-0079

Weinbaum, R., & Onwuegbuzie, A. (2016). Getting more out of your interview data: Toward a framework for debriefing the transcriber of interviews. *Journal of Educational Issues, 2*, 248-263. doi:10.5296/jei.v2i1.9216

Whitehead, L., Crowe, M., Bugge, C., & Coppell, K. (2016). Developing and evaluating complex interventions: Enhancing the role of qualitative research. *International Journal of Qualitative Methods, 15*(1), 1-38. doi:10.1177/1609406916672113

Widjaja, B. T., Sumintapura, I. W., & Yani, A. (2019). Exploring the triangular relationship among information and communication technology, business innovation and organizational performance. *Management Science Letters*, *10*, (1), 163-174. doi:10.5267/j.msl.2019.8.006

Wilson, V. (2016). Research methods: Design, methods, case study… oh my!. *Evidence Based Library and Information Practice, 11*(1), 39-40. doi:10.18438/b8h928

Wirtz, B. W., & Gottel, V. (2016). Technology acceptance in social media: Review, synthesis and directions for future empirical research. *Journal of Electronic Commerce Research, 17*(2), 97-115. Retrieved from http://www.jecr.org/sites/default/files/17_2Paper1.pdf

Wu, J., Kao, H., & Sambamurthy, V. (2016). The integration effort and E-health compatibility effect and the mediating role of e-health synergy on hospital performance. *International Journal of Information Management, 36*(6), 1288-1300. doi:10.1016/j.ijinfomgt.2016.09.002.

Wu, L., & Chiu, M. L. (2015). Organizational applications of IT innovation and firm's competitive performance: A resource-based view and the innovation diffusion approach. *Journal of Engineering and Technology Management*, *35*, 25-44. doi:10.1016/j.jengtecman.2014.09.002

Wunnava, S. (2015). Mobile commerce usage: Application of theory of reasoned action (TRA) and technology acceptance model (TAM). *World Journal of Social Sciences, 5*(2), 41-50. Retrieved from http://www.wjsspapers.com/static/documents/April/2015/4.%20Shalini.pdf

Xu, X., Munson, C. L., & Zeng, S. (2016). The impact of e-service offerings on the demand of online customers. *International Journal of Production Economics, 184*(2), 23-244. doi:10.1016/j.ijpe.2016.11.012

Yap, Q. S., & Webber, J. K. (2015). Developing corporate culture in a training department: A qualitative case study of internal and outsourced staff. *Review of Business & Finance Studies, 6*(1), 43-56. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract _id=2497055

Yates, J., & Leggett, T. (2016). Qualitative research: An introduction. *Radiologic Technology, 88*(2), 225-231. Retrieved from http://www.radiologictechnology.org/content/88/2/225.extract#

Yazan, B. (2015). Three approaches to case study methods in education: Yin, Merriam, and Stake. *Qualitative Report, 20*(2), 134-152. Retrieved from http://www.nova.edu/ssss/QR

Yeh, H. (2015). Effects of ICT's innovative applications on brand image and customer's purchase intention. *International Journal of Organizational Innovation, 7*(4), 31-47. Retrieved from https://eds-a-ebscohost-com.ezp.waldenulibrary.org/eds/pdfviewer/pdfviewer?vid=0&sid=281caa4c-0af5-4612-9a78-345639ccd094%40sdc-v-sessmgr05

Yeo, B., & Grant, D. (2019). Exploring the effects of ICTs, workforce, and gender on capacity utilization. *Information Technology for Development, 25*(1), 122-150. doi:10.1080/02681102.2017.1383876

Yin, R. K. (2016). *Qualitative research from start to finish* (2nd Ed.). New York, USA: The Guilford Press

Yin, R. K. (2018). *Case study research: Design and methods* (6th ed.). Thousand Oaks, CA: Sage Publications.

Yip, C., Han, N.-L. R., & Sng, B. L. (2016). Legal and ethical issues in research. *Indian Journal of Anaesthesia, 60*(9), 684-688. doi:10.4103/0019-5049.190627

Zamanzadeh, V., Ghahramanian, A., Rassouli, M., Abbaszadeh, A., Alavi-Majd, H., & Nikanfar, A. (2015). Design and implementation content validity study: Development of an instrument for measuring patient-centered communication. *Journal of Caring Sciences, 4*(2), 165-178. doi:10.15171/jcs.2015.017

Zamawe, F. C. (2015). The implication of using NVivo software in qualitative data analysis: Evidence-based reflections. *Malawi Medical Journal, 27*(1), 13-15. Retrieved from http://www.mmj.mw

Zaremohzzabieh, Z., Samah, B. A., Muhammad, M., Omar, S. Z., Bolong, J., Hassan, S. B., & Shaffril, H. A. M. (2016). Information and communications technology acceptance by youth entrepreneurs in rural Malaysian communities: The mediating effects of attitude and entrepreneurial intention. *Information Technology for Development, 22*(4), 606-629. doi:10.1080/02681102.2015.1128384

Zhang, C. B., Li, Y. N., Wu, B., & Li, D. J. (2017). How WeChat can retain users: Roles of network externalities, social interaction ties, and perceived values in building continuance intention. *Computers in Human Behaviors, 69,* 284-293. doi:10.1016/j.chb.2016.11.069

Zhu, Y., & Kindarto, A. (2016). A garbage can model of government IT project failures in developing countries: The effects of leadership, decision structure and team competence. *Government Information Quarterly, 33*(4), 629-637. doi:10.1016/j.giq.2016.08.002

Zimmermann, K. A. (2017). History of computing. *Live science*. Retrieved from https://www.livescience.com/20718-computer-history.html

Zotto, P. D., Colombero, S., Pigni, F., & Haggège, M. (2018). Customers becoming creators: How firms leverage technology and customers for new value. *Journal of Business Strategy, 39*(4), 42-65. doi:10.1108/JBS-06-2017-0087

# Appendix A: Interview Protocol

Participant Number_____

| | |
|---|---|
| Hello, Mr. /Mrs. /Ms. (name) My name is Carl Roberts. I want to thank you for agreeing to participate in my DIT study and allocating time from your busy schedule for me to conduct this interview. | As I have mentioned in the email and in the consent form that I have sent to you, my study relates to strategies used by IT project managers to implement IT development frameworks designed to guide Caribbean ICT integration. Do you still agree to participate in my study? |
| Look for any nonverbal cues. Since questions are open-ended, identify any items that can be explored further. Paraphrase as needed.<br><br>Questions 1&2 are preliminary questions intended to put the interviewee at ease and also seek to confirm eligibility to participate. | 1. Describe your current role and how long have you been in similar roles?<br>2. Have you worked in any other role supporting ICT or its integration efforts? Please explain. |
| Questions 3 to 12 are focused on data collection and extracting the highest quality information from the participants' experiences. Questions 3 to 12 also bring the key concepts of the TAM, PEOU, PU, and usage into alignment. | 3. What strategies have you used to implement IT deployment frameworks designed to guide ICT integration? |

| | |
|---|---|
| | 4. What were the key obstacles to implementing strategies to IT deployment frameworks?<br>5. What steps have you taken to overcome these obstacles to implementing strategies to IT deployment frameworks? Please elaborate.<br>6. Describe what strategies or policies would simplify implementation tasks while improving performance and effectiveness?<br>7. How would you define the barriers to implementing strategies that impede ICT adoption and IT project success?<br>8. How would you describe the successes and setbacks of the ICT integration agenda? |

| | |
|---|---|
| Thank the interviewee for participating, stop the audio recording, and conclude the interview.<br><br>**Interview Wrap-up:**<br>Thank you for participating in this study. I will transcribe the audio recording of this interview. With your permission, I will provide you with a copy of the transcribed interview for your review so that you can validate the transcribed interview before inclusion in the final report.<br><br>The interview lasts from 30 to 60 minutes. | 9. What strategies do you believe are useful in implementing successful ICT solutions? Please explain.<br>10. What strategies/policies for integrating ICT can effectively advance positive attitudes toward IT implementation outcomes? Please explain.<br>11. If you had a do-over, explain the changes in approach, design, and strategic implementation you would incorporate?<br>12. What other information would you like to add regarding IT implementation strategies that project managers could utilize to improve the effectiveness of ICT integration and project implementation? Please provide details. |

# Appendix B: Letter of Invitation

Dear Participant:

My name is Carl Roberts. I am currently pursuing a Doctor of Information Technology (DIT) through Walden University in the U.S. I am contacting you because you have been identified by a mutual acquaintance or recommended by your employer due to your professionalism and work as an IT project manager. This invitation kindly requests your participation in a research study to help me better understand the information technology (IT) strategies that you use to implement IT deployment frameworks related to information and communications technology (ICT) integration initiatives in your organization. Your participation is strictly voluntary.

An informed consent form is also attached for your review and is a more formal invitation that is designed with additional details about the study to help you decide whether or not to participate. The consent form describes your rights during the process and the purpose of the doctoral study. The interview will be held at a place and time that is convenient for you and lasts approximately 30-60 minutes. The protection of your participation and information will be consistent with Walden University's confidentiality guidelines.

If you decide to join the study now, you can still change your mind later. You may stop at any time. Within a 2-week timeframe following your interview, I will send you a summary of up to 2 pages that will include my initial interpretations of the data I collected in my interview with you. By a process called *transcript review*, I will invite you to comment on my initial interpretations of the data. You may add, clarify, explain, challenge, or correct my interpretations at that time. The transcript review process should take no longer than a few more minutes of your time. Your participation in this study will be confidential, and you will receive a participant identifier code.

Upon completion of the research, I will provide you with a summarized version of the research results and also share the results and findings with participants and other stakeholders. Please direct any questions or inquiries to xxxxxxxxxx@Waldenu.edu.

Thank you very much for your time and consideration.

Carl Roberts: Doctor of Information Technology Candidate

Walden University/College of Management and Technology

Appendix C: NIH Certification

**Certificate of Completion**

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Carl Roberts** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 09/09/2017.

Certification Number: 2474138.