Factors Affected to Digital Adaption of ICT Applications in Sri Lanka: A Conceptual Model

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ABSTRACT
Organizations invest in ICT applications to gain various benefits, such as improving company performance and reducing costs. Even when companies invest substantial financial resources in these applications, the anticipated benefits may not be realized if users fail to utilize them effectively. Literature reveals that three main factors influence the adoption of technology: individual factors, organizational factors, and technological factors. Several theories address the adoption of new ICT applications, including the Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), Diffusion of Innovations Theory (DIT), and the Decomposed Theory of Planned Behavior (DTPB). Based on these theories, a new conceptual model has been developed, focusing on how technology, individual users, and organizational factors impact perceived ease of use and perceived usefulness. These two elements, in turn, influence digital adoption. This conceptual model is designed to be empirically tested within the telecommunications industry, which is highly dependent on ICT applications for its routine operations. A quantitative methodology will be employed, using a structured questionnaire to collect data from the sample.

Keywords
Adoption, ICT Applications, Telecommunication Industry

1. INTRODUCTION

1.1 Background
Over the past several years, digital transformation has made considerable changes via Information and Communication Technology (ICT) applications in the telecommunication industry. As [9] stated, the developments in ICT in the digital age have significant and varying effects on organizations. The Telecommunication sector is a significant contributor to the economic activities of countries [4]. Furthermore, they stated that developing nations have witnessed significant transformations in this sector due to its impact on their economies [4]. Scholars identified that technology has changed how humans view social interaction, health, finances, manufacturing, production, and even the delivery of services.

The current business environment has been changed due to the emergence of new technological advancements from time to time [11]. The constant technological change simultaneously create threats to established business models, while also offering opportunities for novel service offers [19]. There are different reasons that organizations invest in ICT applications. Where information technology and systems provide economic value to the business [5]. ICT has been regarded as a livelihood intervention and community development tool [17].

Organizational investments in computer-based tools aim to enhance planning, decision-making, and communication processes [8].

The ICT can improve information and knowledge management inside the firm and increase the speed and reliability of transactions. Furthermore, [20] stated that ICT impacts cheaper and faster communications, better customer and supplier relations, more effective and efficient marketing, product & service development and better access to information and training. Furthermore, [22] affirms that ICT enables organizations to decrease costs, increase organizational capabilities and assist to shape inter-organizational coordination. The use of ICT can contribute to reducing coordination costs and facilitating increased outsourcing within organizations. Although organizations invest in ICT applications for various strategic and operational purposes, these systems cannot enhance organizational performance unless they are effectively utilized. As [7] argues that the application of ICT in businesses causes fundamental changes that can provide powerful strategic and tactical tools for organizations if properly applied and used. The adoption of modern technology is postulated to offer several benefits to both individuals and organizations such as performance improvement. Improvements in organizational performance ultimately contribute to profit maximization. While organizations may pursue innovation, their success largely depends on adoption at the individual level. [25]. To fully adopt the ICT applications, organizations must understand the three dimensions of information system; organization, people and technology itself [5].

Resistance to use the end-user systems by managers and professionals is a widespread problem in many organizations. However, as per [3], end-users are often unwilling to use available computer systems that, if used, would generate significant performance gains. Scholars identified many challenges in digital transformation which hinder the smooth implementation of digital approach. The implementation of the right digital transformation strategy is a key challenge [23]. Further, they reveal that there are quite a few different models to assess the maturity of digital transformation. Research projects which explore issues relating to adoption of ICT may contribute to decreasing the ongoing digital gap in society [17]. Underdeveloped countries are still dealing with issues in adopting technologies [5].

Many scholars tried to understand the reasons behind why user's user accept end users' systems by detail analysis [8]. Both practitioners and researchers require a deeper understanding of the factors contributing to user resistance toward computer systems. Such insights are essential for developing practical methods to evaluate systems, anticipate user responses, and enhance user acceptance by modifying system design and implementation processes [8].

1.2 Problem Statement
Despite the widespread integration of digital systems across various domains, the issue of user acceptance continues to pose

significant challenges for both researchers and practitioners. Understanding why end users accept or resist information systems has remained a central focus in technology adoption studies. Foundational work by [8] highlighted that user acceptance is not solely dependent on system functionality or technical sophistication but is also profoundly influenced by users' perceptions and attitudes toward those systems.

Over the years, scholars have conducted detailed analyses to uncover the cognitive and behavioral factors that drive system adoption, yet practical challenges in achieving widespread acceptance persist. The reluctance or resistance of users to engage with new systems can undermine the expected organizational benefits, reduce return on investment, and hinder digital transformation efforts. Practitioners often struggle to evaluate systems effectively or predict user responses, leading to suboptimal implementation strategies.

Thus, there remains a pressing need to explore user acceptance beyond theoretical models, incorporating real-world factors that shape user behavior. A better understanding of these dynamics is essential to design more user-centric systems and tailor implementation processes that foster trust, usability, and engagement. Bridging this gap between theory and practice is crucial for enhancing system success rates and ensuring sustainable digital adoption across industries.

1.3 Research Objectives

To address the identified research problem, the study was guided by the following three primary objectives. Through the course of this investigation, the researcher aimed to:

1. To examine the technological, Organizational and individual factors affecting to adoption of ICT applications
2. To identify how technological, Organization and individual factors affecting to perceive ease of use and perceived usefulness in telecommunication industry in Sri Lanka
3. To identify how perceived ease of use and perceived usefulness affecting the Digital adoption in telecommunication industry in Sri Lanka.

2. LITERATURE REVIEW

This chapter presents a comprehensive literature review of prior research concerning ICT applications, the factors influencing digital adoption of these applications, and the barriers hindering successful adoption.

2.1 Information and Communication Technology in an organization

Organizations invest in information technology and systems due to their potential to generate economic value and enhance business performance [5]. Furthermore, [22] affirms that ICT enables organizations to decrease costs, increase organizational capabilities and assist to shape inter-organizational co-ordination. Therefore, the use of ICT can help to lower coordination costs and increase outsourcing in organizations. Due to the above reasons many organizations invest in ICT applications in their organizations.

2.2 Digital Transformation

Scholars argue that there is no commonly accepted definition of the term “digital transformation”. Different scholars define it differently. As per the [12] digital transformation defined as “the managed adaptation of organizations as they capitalize on digital technologies to change bus-ness models, improve existing work routines, explore new revenue streams, and ensure sustainable value creation”.

2.3 Factors affected to Digital Adoption

The review findings indicate that adoption is a collective and interactive outcome influenced by multiple factors. Therefore, identifying priority factors and adopting a holistic approach are essential to promote broader and more effective adoption [10].

Scholars identified several factors that affected digital adoptability. Mainly factors related to individuals [24] [10], factors related to organization [10],[24], [5],[18] and factors related to technology [24], [10], [5]. A similar argument forwarded by [5] stated that to fully adopt the information systems, organization must understand the three dimensions of information system; organization, people and technology itself [5].

Factors related to users or individuals such as gender, age, educational level, computer-er and internet skills [10], user experience [16], [10], [5], computer self-efficacy [5] individual perception of the usefulness of modern technology [16], individual's cognitive interpretation of modern technology [16].

Factors related to organization such as infrastructure [18] management support [18], [5], government policies, level of security [18], [5], [5], maintenance cost skills and adequate training [18], [16], [5] and investment cost respectively. As per [18], little consideration or priority given to the IT development project in the company [5], low budget [5].

Factors related to technology such as affordability, availability [10], compatibility, complexity, trialability and observability [10], convenience, consumers’ need, security, system quality [5], information quality [5], service quality [5], User friendliness, Accessibility, Relative advantage [8].

The main three categories consist of inter dependencies. As [5], highlighted that budget constraint indirectly affected to lack of training and gain individual skills. Furthermore, they argue that experience working on technologies and systems greatly affects the ability of employees to learn about new technology, and hence the adoption of systems.

Additionally, some scholars identified perceived ease of use [16], [8], innovativeness [16], perceived usefulness [8] and social environment [16] as factors affected to digital adoption. Further, some study speculates that system quality has direct and positive effects toward perceived usefulness, and system quality as an important indicator of successful adoption of information systems [4].

Therefore, identification and compilation of these factors will support future studies and researchers [10].

2.3.1 Technological Factors

Different research identifies Technological Factors that affected digital adoption. Such as service quality, accessibility, user friendliness, perceive benefits, etc.

2.3.1.1 Service Quality

Several scholars identified service quality as a key parameter under technology category [5]. Several scholars define service quality as the caliber of support provided to system users by the Information Systems (IS) department and IT support personnel. Key dimensions of service quality include responsiveness, accuracy, reliability, technical competence, and empathy demonstrated by support staff.

2.3.1.2. Accessibility
Accessibility is another factor identified under the technological factors [8].

2.3.1.3 User friendliness
Different researchers define user friendly as a factor of Technology which affects the digital adoption [8].

2.3.1.4 Perceived benefits
Different researchers identified that perceive benefit of use of technology as a factor for digital adoption [14].

2.3.2 Organizational Factors
The organizational factors are critical when considering the adoption of ICT applications [24], [10], [18], [5]. Furthermore, literature reveals that several organizational factors significantly influence the adoption of new technologies and innovation. Some of such factors are details below.

2.3.2.1 Top Management Support
Top management support is a key organizational factor influencing digital adoption. It plays a critical role in ensuring adequate resource allocation and in acting as a change agent to foster an environment conducive to the successful implementation of ICT applications [5]. Different scholars have identified that management support is a critical measure to measure the organizational factors [18], [5]. Scholars have identified that managerial support may influence and motivate workers to adopt new technology in the organization. Provision of managerial support is believed to be one of the main facilitating conditions [6].

2.3.2.2 User Training
User training is another critical organizational factor influencing digital adoption. Training involves equipping individuals with the necessary skills to effectively use Information Systems. It plays a vital role in facilitating system adoption. The literature highlights a strong correlation between the average education level, public training, and the dissemination of new technologies. Numerous scholars emphasize that addressing training needs is essential for individuals to adopt new technologies and ICT applications successfully.

2. 3. 3 Individual Factors
Individual factors, often referred to as people-related factors, represent the most critical dimension in the adoption of ICT applications. These factors not only directly influence adoption outcomes but also shape the impact of organizational and technological factors. Prior research identifies key individual attributes such as age, gender, educational level, educational background, work experience, and attitudes toward technology. These characteristics significantly affect how individuals perceive and engage with new technologies or innovations. Moreover, they influence decision-making based on both existing competencies and the perceived relevance of new skills required to effectively utilize or adapt to emerging ICT solutions [1].

2.3.3.1 Computer Self-Efficacy
Computer self-efficacy is used to measure the individual factors that affect digital adoption. The computer's self-efficacy refers to an individual's belief that he or she has the skills and abilities to accomplish a specific task successfully. The literature reveals that computer self-efficacy is a part of individual factor that affected ICT adaptation [5]. Furthermore, they defined computer self-efficacy as experience duration or level of an individual's prior use of computers and ISs.

2.3.4 Perceived Usefulness
The perceived usefulness is considered as a factor that affected digital adaptation in literature. Perceived usefulness is defined as the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context [8]. Perceived usefulness is defined as the degree to which a person believes that using the new technology will enhance their task performance [21]. Scholars argue that perceived usefulness strongly influences people's intentions.

2.3.5 Perceived Ease of Use
Many literatures identified perceived ease of use consider as a factor that affected to ICT adoption [16], [8]. The perceived ease of use refers to the degree to which the prospective user expects the target system to be free of effort [8]. Perceived ease of use is the most common measure of system quality considering the significant amount of research relating to the TAM (Davis,1989) [4].

2.4 Barriers to Digital Adoption
Several researchers identified different factors that hinder digital adoption. After cost, the single biggest constraint on ICT investment was the uncertainty over the potential business benefit from such investments. Perhaps linked to this, a fifth of the respondents also cited lack of internal IT expertise as a barrier to ICT adoption [13]. Scholars identified some factors such as system quality, information quality, service quality, top management support, user training, computer self-efficacy, and user experience that hinder the digital adoption in telecommunication industry [5].

3. RESEARCH METHODOLOGY
This study employs quantitative research methodology, beginning with a comprehensive review of existing literature in the domain of digital adoption. Drawing upon prior research and established theoretical frameworks related to ICT application acceptance, a conceptual model is developed. Based on this model, a structured questionnaire is designed to collect responses from users of ICT applications within the telecommunications industry in Sri Lanka.

3.1 Related Theories
There are several theories related to this research work. Theory of Reasonable Action (TRA) developed by Namly Fishbein and Ajzen's (1975) is one theory use for this research. Where TRA is an especially well-researched intention model that has proven success in predicting and explaining behavior across a wide variety of domains. The TRA is very general, "designed to explain virtually any human behavior" [2] and hence it is appropriate theory for studying the determinants of computer usage behavior.

The Technology Acceptance Mode (TAM) is another widely accepted theory which is used for this research study. TAM (Davis, et al., 1989, Technology Acceptance Model 2 (TAM2) Venkatesh and Davis (2000) and Technology Acceptance Model 3 (TAM3) Venkatesh and Bala (2008) are considered as model develop to accept the user acceptance of information systems or technology.

Furthermore, the Theory of Diffusion of Innovations (DIT) (Rogers, 1995), Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991), Decomposed Theory of Planned Behavior, (Taylor and Todd, 1995) were considered for this research work where all these above mentioned TRA, TAM, DIT and

DTPB explain the acceptance of ICT applications or the technology.

3.2 Conceptual Model Design

The conceptual model designed based on the studies done on theories such as TAM, TRA, DIT and DTPB. Further factors used by past researchers were considered when designing this conceptual model. Extensive research has identified that technology, organizational, and individual factors significantly influence digital adoption and the use of ICT applications. Numerous studies have examined various sub-factors within these three primary components. Furthermore, these components—technological, organizational, and individual factors—have been found to significantly influence users' perceptions, particularly perceived ease of use and perceived usefulness. These perceptions play a pivotal role in driving digital adoption of ICT applications. In essence, the way users evaluate the usability and user-friendliness of ICT systems is shaped by the underlying technological infrastructure, organizational support mechanisms, and individual characteristics. Accordingly, this conceptual model is developed to investigate the relationships between perceived ease of use, perceived user-friendliness, and the adoption of ICT applications. Additionally, the model aims to explore how technological, organizational, and individual factors contribute to shaping these user perceptions.

In this conceptual model, technological factors are operationalized through four key dimensions: accessibility, user-friendliness, service quality, and relative advantage. Organizational factors are measured using indicators such as line management support and user training. Individual factors are assessed based on computer self-efficacy, user experience, and attitude toward change. These measurement dimensions were selected based on a thorough review of existing literature and prior empirical studies, ensuring theoretical relevance and practical applicability.

3.3 Population and Sampling Method

The target population for this research comprises users of ICT applications within Sri Lanka's telecommunications industry. This includes employees from two fixed-line operators and three mobile operators currently operating in the country. Specifically, the study focuses on individuals who actively use ICT applications introduced by the management of these five telecommunication service providers

It is planned to use stratified random sampling method as sampling method for this research work. The sample size will be decided by the [15].

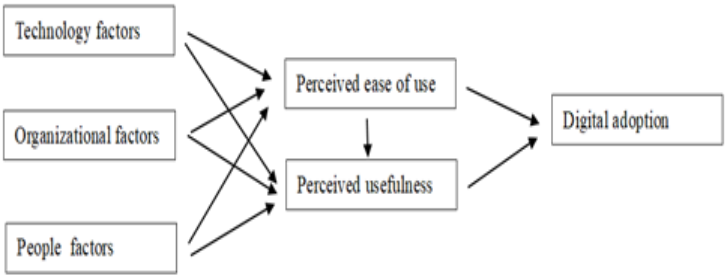

Fig. 1. A Conceptual Model

4. CONCLUSION

Various theoretical models have identified a range of factors influencing digital adoption in ICT applications. The conceptual model developed in this study is grounded in an extensive review of these theories and a careful analysis of prior research. This model is intended to be empirically tested using data from the telecommunications industry, which is characterized by extensive deployment of digital applications and significant investment in ICT infrastructure.

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