ERP Implementation Critical Success Factors; A Study from Sri Lankan Context

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ABSTRACT

Purpose: The paper aims to research and investigates about the factors that influence the success of ERP system implementation at Brown and Company PLC. The study was framed through DeLone, Petter & McLean's (D&M) Model of IS success and the Technology Acceptance Model (TAM).

Design/Approach: The research paper uses the past literature and conceptual framework developments to illustrate that Top Management Support, User Involvement and Satisfaction and Change Management practices of an organization to be key drivers that could contribute to the success of an ERP project. The primary data was obtained using a *'Web-Based Questionnaire'*, which was then used for further statistical analysis since this research intended to develop the correlative relationship between dependent and independent variables.

Results: Key findings demonstrated that Top Management Support and User Involvement and Satisfaction to positively relate to the success of ERP implementation, and that they also positively influence the implementation success. On the other hand, Change Management practices did not result in a relationship or any significant impact on the success of ERP implementation. The findings of this study offer valuable insights to organizations in Sri Lanka as it demonstrates the critical factors ERP project management teams need to consider when implementing an ERP system or when upgrading one. However, further research is deemed necessary to analyze why Change Management practices in the company did not produce the expected results.

Key Words: ERP Implementation; Success Factors; Top Management Support; User Involvement and Satisfaction; Change Management Practices; DeLone, Petter & McLean's (D&M) Model of IS success and the Technology Acceptance Model (TAM).

1. INTRODUCTION

The purpose of this research is to investigate the critical success factors that could affect the successful implementation of an Enterprise Resource Planning (ERP) System at Brown and Company PLC. ERP can be identified as a Software Platform that allows organizations to streamline business operations (Jatty & Manujunatha, 2017) into a single platform architecture (Klaus & Rosemann, 2000). An ERP System can automate processes, handle BigData, remove data duplication, minimize costs, and eventually increase business performance (Hayes, 2019). However, majority of ERP implemented projects have been reported to fail due to various reasons (Lapiedra, Alegre & Chiva, 2011). Hence, it is deemed crucial to identify the critical success factors that can support the successful implementation of an ERP System at Brown and Company PLC.

Brown and Company PLC is a Sri Lankan conglomerate which was established 143 years ago. The company implemented the Microsoft Dynamics AX-2009 ERP Platform in 2012 which enabled the organization to streamline its business processes whilst providing an opportunity to expand the business as flexibility, faster decision-making and data was easily accessible. Currently, the ERP system has been upgraded to the Microsoft Dynamics 365 Business Central Cloud Platform (Annual Report, 2019). The research problem stems from a practitioner perspective as the main author of this study identified that many change requests from the users were generated for the current ERP System. However, the support tickets in the system decreased over the years, specifically in the last six months.

As such, technology currently is rapidly advancing where organizations are required to upgrade their business processes accordingly if they wish to sustain competitive advantage (Lapiedra, Alegre & Chiva, 2011). Hence, upgrading the ERP system to reflect current advancements is crucial and is identified as the post-implementation stage as a mechanism of responding towards industrial demands (Faja & Cata, 2001). Indeed, it is recommended that ERP systems should be upgraded every three years (Olson & Zhao, 2006). Nonetheless, due to various costs an organization needs to bear (Chan, Ng & Gable, 2010), and the complexity of the system which requires human, financial, and knowledge-based resources (Olson & Zhao, 2006); the success rate of ERP implementation is argued to be low and prone to failure. Further, it is claimed that up to 90% of ERP projects are delayed or over-budgeted (Xu, Rondeau & Mahenthiran, 2019). Further, the literature also suggests that 72% of ERP projects to have failed (Panorama Consulting Group, 2010). Hence, scholars have called for research to be conducted where the success factors of ERP Implementation can be correlated to the contextual factors of each ERP applying sector (Tsai, Li, Lee & Tung, 2011).

In order to achieve an effective ERP Implementation, it's crucial to have the appropriate groundwork for an ERP implementation project. After analyzing several ERP Projects and Articles, the author found that '**Business Commitment**' is a key factor that has a direct effect on the total project success rate and it's a key component that impacts towards the overall project

performance. The below figure (Refer Figure_1) depicts crucial factors discovered during the initial secondary data collected from the company's internal documentation and research papers.

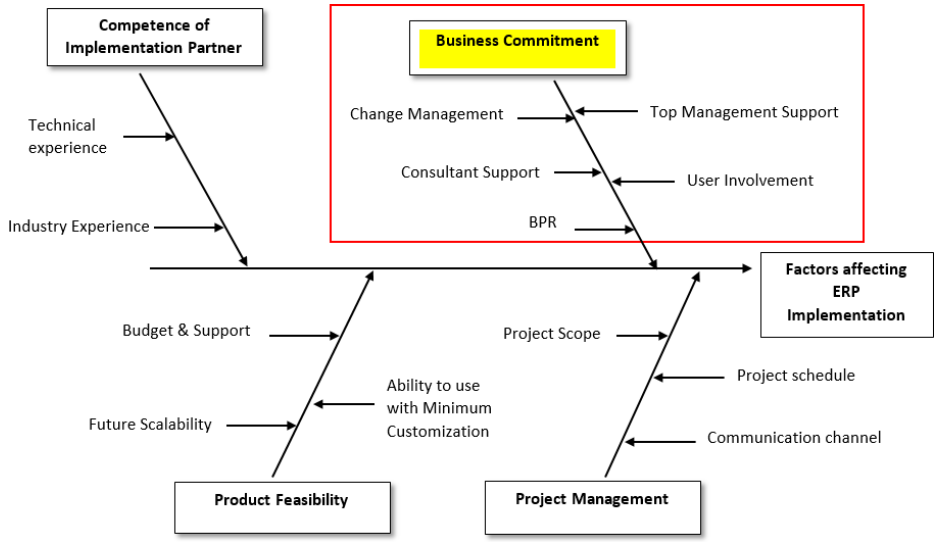


Figure 1: Fish Born Diagram (Source: Author's Work)

The research aims to study the ***critical success factors that affect the implementation of an ERP system at Brown and Company PL***C. Hence, the research question established is "What are the critical factors that affect the success of ERP implementation and up to what extent those factors will affect towards Brown and Company PLC for ERP implementation projects?". The objectives of this study are as follows:

Main Objective:

- ✓ Identify the critical success factors in ERP implementation and recognize the criticality of each factor from the company perspective. By doing this, the Browns Group can easily judge and allocate its resources effectively to achieve higher performance in ERP implementation projects. Further, from a business perspective, it will help to make quick decisions for the organization.

Sub Objectives:

1. Identify whether the **Top Management Support** does have a positive impact on the success of ERP implementation.

2. Identify whether **User Involvement and Satisfaction** does have a positive impact on the success of ERP implementation.

3. Identify whether the **Change Management Practices** does have a positive impact on the success of ERP implementation.

2. LITERATURE REVIEW

2.1. The Evolution of ERP Platforms

The evolution of the ERP platforms can be traced back to the 1970s where organizations started implementing systematic versions of inventory management (Jacobs & Weston, 2007). Eventually these inventory management applications evolved into the Material Requirements Planning (MRP) Platforms in the 1970s by J.D. Edwards where concepts such as SAP were introduced (Egdair & Rajemi, 2015). MRP Platforms consisted of closed-loop scheduling, improved production, floor monitoring, and forward scheduling also known as MRP-II. In the 1980s, the world witnessed the introduction of ERP vendors such as SAP, IBM, J.D. Edwards, Baan, PeopleSoft, and Oracle (Goldston, 2020). However, in the 1990s due to the dynamic nature of competition, ERP applications were combined into single platforms (McCue, 2020). Currently, ERP systems are advanced where cloud-based platforms are used consisting of Internet of Things (IoT) and Artificial Intelligence (AI) technologies (BigBang, 2020).

The current ERP platforms offer numerous advantages for businesses and these for instance include it helps to standardize business operations, offers better access to information, and could lead to better economic advantages for the firm (Hemanth K., 2013). Better decision-making capabilities can be gained where internal units and regional locations can connect too (Chatzoglou, Fragidis, Chatzoudes & Symeonidis, 2016). This means that better collaboration and overall productivity can be achieved through ERP system implementation. Nevertheless, the ERP implementation process needs to be carefully planned for these benefits to be gained because when introducing a new ERP system there is many responsibilities to be born and structural adjustments may be needed (Odhiambo, 2010).

2.0 ERP Software and Implementation Methodologies

The Life Cycle Model can be used for the new ERP software implementation which contains four stages (Huang & Yasuda, 2014). These are namely (1) Project Chartering Phase, (2) The Project Phase, (3) The Shakedown Phase, and (4) The Onward and Upward Phase (Diceus, 2022). Further, ERP software can be used for the implementation and these for instance include an application also known as Line of Business Solutions (The Digital Group, 2020). This application offers a Tier solutions system which are divided into three tiers (Singh, 2006). Additionally, ERP implementation methodologies should be followed such as the Big Bang Approach, the Phased Approach, and the Parallel Approach (Lumenia, 2020). More importantly, empirical studies indicate various factors to impact the success of ERP systems implementation. These include firstly top management support, secondly user involvement and satisfaction and thirdly change management as critical success factors.

2.1 Theoretical Framework

This research used the (DeLone, Petter & McLean's (2008)) (D&M) Model of IS success and the Technology Acceptance Model (TAM) to theoretical frame the study. The IS success model enables research such as this one to comprehend the end-user satisfaction and perceived system efficiency whilst linking system quality, customer satisfaction and a system's net benefits (Lin, Hsu & Ting, 2006). As such, the model utilizes the constructs of information quality, system quality and service quality to analyze the relationships with usage and customer satisfaction. Therefore, the benefits and end user experiences can be investigated through this model for ERP systems. The TAM Model is also a theoretical framework which is popular when investigating the adoption of cutting-edge technology and customer attitudes (Salam & Amoako, 2004). As an ERP system is complex and adaptation is a lengthy process where high costs are associated with it where ERP adaptation can fail easily (Umble, Haft & Umble, 2003). Hence, the TAM Model can be used to understand the perceived functionality of an ERP system and the effects it has on user adaption.

2.2 Hypothetical Framework on ERP Critical Factors

Base on the literature review results, the author of this research came up with the below hypothesis.

Dependent Variable :
Success in ERP Implementation.

Independent Variables :

A. Top Management Support.

B. User Involvement and Satisfaction.

C. Change Management Practices.

- **HA_1**: Top Management Support does have a positive impact on the success of ERP implementation.
- **$H0_1$**: Top Management Support does not have a positive impact on the success of ERP implementation.

- **HA_2**: User Involvement and Satisfaction does have a positive impact on the success of ERP implementation.
- **$H0_2$**: User Involvement and Satisfaction does not have a positive impact on the success of ERP implementation.

- **HA_3**: Change Management Practices does have a positive impact on the success of ERP implementation.
- **$H0_3$**: Change Management Practices does not have a positive impact on the success of ERP implementation.

3. METHODOLOGY

3.1. Conceptual Framework of the Research

A Conceptual Framework is a visual representation, where it displays the relationship between dependent and independent variables (Swaen, 2022). Base on the literature review, the researcher has identified Top Management Support, User Involvement, and Change Management as the independent variables and the success of ERP Implementation as the dependent variable (Refer Fig_2). The results of an appropriate relationship for the research hypothesis are highlighted by the research process, and analytical methods will illustrate the correlation.

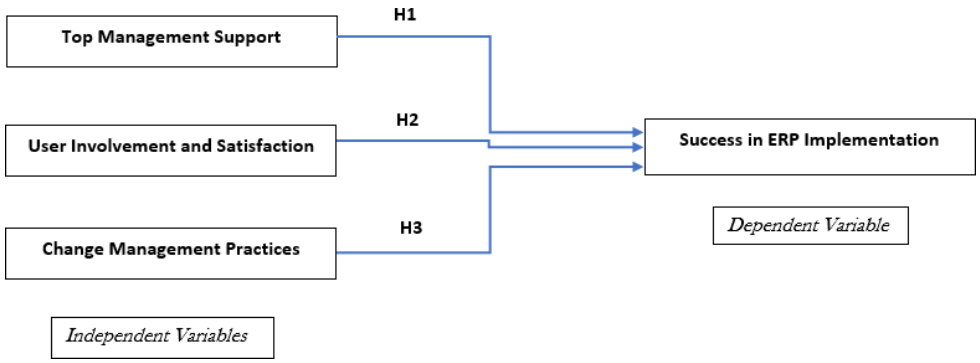


Figure 2: Conceptual Framework (Source: Author's Work)

3.2. Hypothetical Framework of the Research

The hypotheses that were derived using the Conceptual Model while describing the research question are explained in the below table and through this analysis, the researcher can identify up to what extend those ERP Critical factors will affect towards the success of ERP Implementation (Refer Fig_3).

H1	HA_1	Top Management Support does have a positive impact on the success of ERP implementation.
	$H0_1$	Top Management Support does not have a positive impact on the success of ERP implementation.
H2	HA_2	User Involvement and Satisfaction does have a positive impact on the success of ERP implementation.
	$H0_2$	User Involvement and Satisfaction does not have a positive impact on the success of ERP implementation.
H3	HA_3	Change Management Practices does have a positive impact on the success of ERP implementation.
	$H0_3$	Change Management Practices does not have a positive impact on the success of ERP implementation.

Figure 3: Hypothetical Framework (Source: Author's Work)

3.3.Hypotheses Analysis

3.3.1. Top Management Support and ERP Implementation Success

Top Management involvement and support has been identified as one of the crucial factors that can influence the success of a new ERP system implementation (Basir, Vakilian & Mobarakabadi, 2014). Indeed, scholars argue that ERP users need to be trained and educated on the new system which implies a strong need for Top Management initiation for such practices. This is because when implementing an ERP system employee resistance can occur and negatively affect the project where it could even lead to the failure of the implementation. Indeed, past empirical research by (Motwani, Subramanian & Gopalakrishna, 2005) through a survey established that Top Management Support to have a strong positive relationship with Change Management, Network Relationships and Cultural Preparation when it came to ERP implementation. Other studies suggest that transformational leadership to impact corporate culture during ERP Implementations where Top Management needs to proactively take actions to ensure not only the smooth flow of the ERP Implementation project but the long-term progress of the project (Shao, Feng & Hu, 2017).

Top Management Support can influence the success of ERP Implementation mainly through providing leadership and allocating sufficient resources for the project (Al-Fawaz, Al-Salti & Eldabi, 2008). Hence, literature argues that Top Management Support should also include appropriate planning and the monitoring of the ERP Project (Bhatti, 2005). Allocating adequate funds for the training and education of end users has also been identified as a key component of Top Management Support towards the success of ERP Implementation by (Umble, Haft & Umble, 2003). They suggest that 10-15% of the total ERP budget to be allocated for the training of end users which could lead to a better chance of successful ERP Implementation. Further, coordination of the data flow in the new system needs to be one of the main goals of the Top Management as it will affect the successful implementation of ERP systems (Kim, Lee & Gosain, 2005). Therefore, based on the literature, the below hypotheses have been established to investigate the roles of Top Management Support on ERP Implementation.

HA1: Top Management Support has a positive impact on the success of ERP Implementation.

3.3.2. User Involvement and Satisfaction and ERP Implementation Success

User Participation and Involvement helps understand how the ERP Platform is performing according to various user needs (Basir, Vakilian & Mobarakabadi, 2014). Hence, their satisfaction with the ERP system can affect the success of the project. This also provides an opportunity to receive feedback and improve the ERP Platform as needed for the target audience. It also facilitates two-way communication between the user and the project management team. Research findings by (Bhatti, 2005) noted that user can be involved in projecting ideas towards the success of the ERP Implementation. This is by firstly the user becoming involved in the requirements of the ERP system which enables automatic participation of the user in the ERP Project. Other scholars suggest that when a vendor and a customer collaborate, it leads to an effective execution of the ERP Implementation process (Ahmed, 2012). As such it is deemed vital to investigate the relationship and effect between user involvement which can produce user satisfaction and ERP Implementation success.

Nonetheless, for ERP Implementation to be successful, End-Users need to be trained through user level involvement. By providing training to the end users, it will support the confidence building of the ERP System usage and help gain experience for the end-user too. Such training courses should help the end user to recognize the new processes, learn them and integrate them to work (iTech, 2020). Indeed, (Basir, Vakilian & Mobarakabadi, 2014) suggested that it is crucial to first identify the potential users, make clear contact with them by the project team and to establish the users' needs in the ERP System adaptation.

However, when implementing a new ERP System, it can be argued that many organizations face difficulties. Hence, literature indicates that end-user engagement to be a fundamental cause that could stymie the implementation process performance (Pries-Heje, 2008). Therefore, for an ERP implementation process to be successful, it is recommended that end-user engagement processes to be put in place with training and adequate communication channels (Gyampah & Salam, 2004).

Further, scholars recommend people, process, and technology approaches to be taken into consideration when striving to achieve the desired results of the ERP Project Implementation (Lewis, 2020). With regards to people, it is first necessary to identify the key stakeholders where the management of people throughout the implementation process is needed incorporating user involvement.

Further, the process needs to be analyses appropriately during each stage of the ERP Implementation. Once this is done, the project team needs to match the existing business functionalities with the new ERP Platform. If appropriate processes are not followed according to guidelines and adjustments made, much resistance can arise from the stakeholders involved. Finally, technology needs to be updated during the ERP Implementation. This needs to be approached in a manner where technology is combined with the support services offered with the aim of meeting the business requirements and allocated budgets. Based on these details, the below hypotheses will be tested in this research.

HA2: User Involvement and Satisfaction has a positive impact on the success of ERP Implementation.

3.3.3. Change Management Practices and ERP Implementation Success

Another crucial factor that influences the success of ERP Project Implementation is how well the organization engages in Change Management (Matende & Ogao, 2013). Indeed, it is argued that many ERP Implementations fail because project teams may have underestimated the effort required in managing change (Bhatti, 2005). Further, resistance to change has been identified as a key factor that hinders ERP Project Implementation (Shehab, Sharp, Supramaniam & Spedding, 2004). This could be mainly since when a new ERP Platform is implemented many modifications are made to the existing system which in turn could lead to opposition, confusion and errors made by the users. Hence, effective Change Management is needed from the project team to demonstrate how the new system can be used and to create user readiness (Aladwani, 2001). Nonetheless, it is argued that project administration needs to pay adequate attention to the changes where Change Management needs to happen with people, procedures, and technologies been considered at the core (Newmann, 2020).

Change can be managed by utilizing models such as the Three-Stage Process of Change by Kurt Lewin (Guide, 2009). The first stage of the model which is known as unfreeze is said to be the most challenging one the organization may face as employees need to be aware of the need for change. This can be done through educating the users and motivating them to accept the new ways of working. Hence, operational communication is critical at this stage during the ERP Implementation. The second stage involves the change being implemented where the modifications for the ERP System will take, please. In this stage the status quo will be unfrozen, and project

management team needs to be diligent, have effective communication and create enthusiasm from the users towards the change. The final step involves refreezing where the change becomes a part of the organizational culture. However, once the ERP System is implemented, it is still important to continuously motivate, respect, praise and provide support for the stakeholders involved. Hence, this research considers Change Management to have a key influence in the success of ERP Project Implementation and the below hypotheses have been developed.

HA3: Change Management practices does not have a positive impact on the success of ERP Implementation.

3.4.Research Design

3.4.1. Research Philosophy

A framework of assumptions and beliefs about the source, nature, and development of knowledge is referred to as Research Philosophy (BRM, 2020). According to (Saunders, Lewis & Thornhill, 2020), a valid research philosophy is built with a very clear collection of assumptions base on the research question and data collection methods, etc. Further, when performing research, it's crucial to understand the study's fundamental research philosophies, since this means a specific way of looking at the factors of the research. When analyzing the research philosophies, there are four different types of methodologies including Positivism, Realism, Interpretivism, and Pragmatism that can be used when conducting research. Acting with an observable social fact to make law-like generalizations is what positivism implies (Saunders, Lewis & Thornhill, 2020) and this positivism will be used when analyzing the external environmental factors through a quantitative approach.

As a result, the researcher of the study would use a ***'Positivism Approach'*** to conduct the analysis since the data collection process is considered a quantitative method. When studying the environment, it became clear to the researcher that the analysis would not be

interrupted by external environmental influences, so a positivism theory would be the best fit for the research.

3.4.2.Research Approach

When considering the research approaches, there are two common approaches to do the research analysis (Saunders, Lewis & Thornhill, 2020): deductive, and inductive. In the deductive approach, the researcher will analyze what others have done, reads current theories about whatever phenomena that the researcher is researching, and then put certain theories to the test using a hypothetical framework. The aim of the inductive approach is to develop a hypothesis based on empirical evidence gathered by qualitative methods.
This research's hypothesis began with an established theory and was then put to the test through a quantitative approach to see whether the theory held up in practice, implying that the *'Deductive Approach'* is the most appropriate method for this research. Furthermore, by using measuring metrics, the research results would map the outcome of an accurate relationship based on the dependent and independent variables.

3.4.3.Research Strategy

According to (Saunders, Lewis & Thornhill, 2020), the deductive method typically entails a link with a survey technique, which is present in this research study. In addition to quantitative analysis, the deductive approach emphasizes quantification in data collection and interpretation (BrymanBell, 2011). Survey analysis is a cross-sectional design in which data were gathered primarily through a questionnaire; it is intended to identify associations between variables after receiving a body of quantitative data in relation to two or more variables. The researchers were able to characterize the population in terms of various attributes and test hypotheses and conclusions based on this population by performing a questionnaire (Jackson, 2015).
The primary data was obtained using a ***'Web-Based Questionnaire'***, with the use of *'BOS Web Platform' (www.onlinesurveys.ac.uk)*, which was then used for further statistical analysis since this research intended to develop the correlative relationship between dependent and independent variables. In order to identify the Candidates, the 'Mono Method' will be chosen by the researcher.

3.5.Population and Sample Selection

When considering the above research, the author's aim is to identify the ERP Critical success factors and arrive at a conclusion on up to what extent those factors will affect the success of ERP implementation in Browns and Company PLC.

As the key ERP users of the company have experience in working with ERP Platforms and have knowledge in ERP System Implementation phases; they were considered as the most suitable population for this study. Among the 668 Employees at Brown and Company PLC (D & B Business Directory, 2021), the target population amounted to 94 Employees (Refer Fig_4). These employees belonged to different divisions of the company such as the Agriculture Division, Battery Division, PSD Division, and AC Division which consisted of the company's ERP implementation team and the employees of the implementation partner - ZILLIONe.

This highly specialized group of employees resulted in a relatively small pool of potential respondents; however, the employees selected were highly trustworthy because they closely matched the study's objectives. In the research ***'Purposive Sampling Technique'*** was chosen for this analysis because it is most widely used for survey research techniques that include inferences from a sample of a population to address the research question.

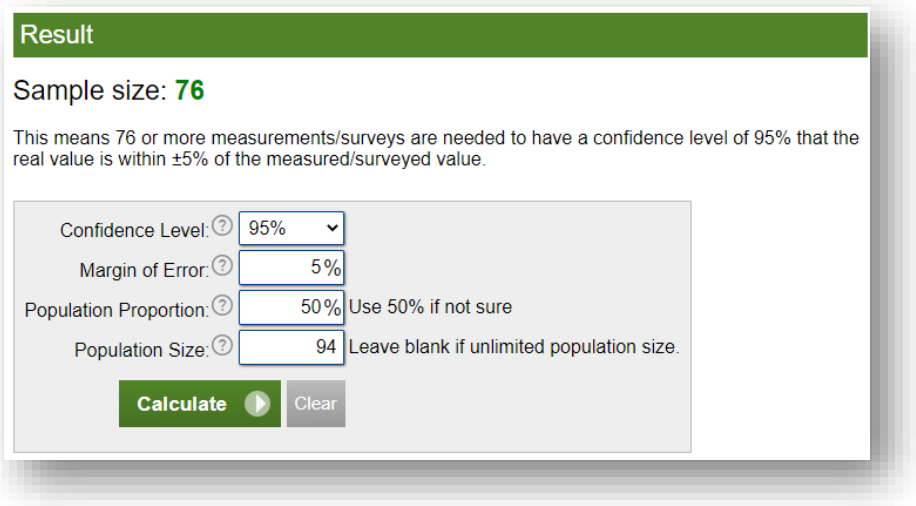


Figure 4: Sample Size Calculator (Source: Sample Size Calculator, 2022)

The data collection process took approximately a week's time, where the total number of responses obtained was 94, which is a response rate of 85.11%. However, two surveys were incomplete and was eliminated from further data analysis, resulting in a final sample size of 76.

Among 76 employees, 31% were from the ERP implementation team of the company, followed by 19% each in the Agriculture and Battery Divisions. A cumulative of 27% employees were from the PSD and AC Divisions, while only a 4% belonged to the implementation partner- ZILLIONe. A cumulative of 62% of employees have been in the ERP industry between 1-5 years, while a 17% have experience for more than 5 years, and a 12% for less than one year. Half of the users of ERP (50%) belonged to the services and maintenance department of the company, while the rest belonged to the ICT (36%) and the Finance and Insurance Department (14%). Most of the employees involved with ERP implementation played the role of an IT coordinator/ERP support staff (31%), where both managers and assistant managers accounted for a 38% among the respondents. Super user executives accounted for a 18%, while only a 6% of employees were identified to be playing the role of a data entry user (Refer Tab_1).

Variable	Category	Frequency	Percentage [%]
Sub-Division	ERP Implementation Team	24	31
	Agriculture Division	15	19
	Battery Division	15	19
	PSD Division	8	10
	AC Division	13	17
	ZILLIONe	3	4
Time in ERP Industry	< 1 year	9	11
	1-3 years	26	33
	3-5 years	30	39
	5-10 years	7	9
	> 10 years	6	8
Department	ICT	28	36
	Finance & Insurance	11	14
	Services & Maintenance	39	50
Role Played	Data Entry User	5	6
	IT Coordinator/ ERP Support Staff	24	31
	Super User Executive	14	18
	Manager	13	17
	Assistant Manager	17	22
	Functional Consultant	3	4
	Business Analyst	1	1
	Engineer	1	1

Table 1: Demographics of respondents (Source: Author's Work)

3.6.Validity and Reliability

The critical factors of ERP including the Top Management Support, User Involvement and Satisfaction, and Change Management Practices were measured using a *five-point Likert Scale* ranging from Strongly Disagree to Strongly Agree. Each of these factors consisted of six items to be rated by the respondents, where contrary to this, the success of ERP implementation consisted of four items, however, used the same five-point Likert scale as above.

Scales for the Top Management Support was adapted from (Pettersson & Desalegn, 2018) and (Jiwa, Siagian & Jie, 2020), where sample items included Higher Management support is important for ERP Implementation, and Higher Management is familiar with the ERP system's functionalities. However, the factor analysis performed to ensure construct validity identified that only five items were valid out of the six (Hair Jr, Black, Babin & Anderson, 2010), thereby excluding the statement, Higher Management is supportive while taking business decisions for ERP Implementations. The final items resulted in a *Cronbach's Alpha Score of 0.887*, indicating that the measurements are internally consistent.

The measurements of User Involvement and Satisfaction were adapted from (Mao & Pan, 2009) and (Matende, Ogao & Nabukenya, 2015), which included sample items of User Involvement in each stage is important for the success of ERP Implementation, and Users were allowed to perform tests in the ERP system before it was implemented. All the six items under this construct were found to be valid based on the factor analysis, while the *Cronbach's Alpha Score of 0.871* indicated high internal consistency among the measurements.

Measurements for Change Management Practices were adapted from (Doan & Nguyen, 2020) and (Barth & Koch, 2019), where the employees were asked to rate statements, such as Change Management plays a major role in ERP Implementation, and Change Management team considered input from a variety of people involved during ERP Implementation. However, post factor analysis, one item was found to be invalid (Hair Jr, Black, Babin & Anderson, 2010), which was, The Change Management team was helpful in managing change. This led to the construct having five items for the data analysis with a *Cronbach's Alpha Score of 0.709.*

Success of ERP Implementation included items such as ERP selection is an important part for the success of ERP Implementation, and Data Migration from previous system to ERP System was accurate, which were adapted from (Barth & Koch, 2019), and (Maditinos,

Chatzoudes & Tsairidis, 2012). The four items used to measure the variable was found to be valid based on the factor analysis, where the *Cronbach's Alpha Score of 0.782* indicated that the measurements were reliable.

Once the validity and reliability were tested, descriptive statistics were calculated, and a correlation analysis was performed to identify relationships between variables. Regression modeling was then used to find the impact from critical factors of ERP on the success of ERP Implementation at Brown and Company PLC.

4. DATA REPRESENTATION AND ANALYSIS

4.1.Descriptive Statistical Analysis

Descriptive Statistics are used to explain the basic characteristics of data in a sample. In the context of this study, descriptive statistical measures such as the mean and the standard deviation were used to describe all the key variables, as discussed below.

	N	Minimum	Maximum	Mean	Std. Deviation
Top Management Support	78	3	5	4.12	.521
User Involvement and Satisfaction	78	2	5	4.07	.558
Change Management Practices	78	2	5	4.23	.434
Success in ERP Implementation	78	3	5	4.27	.496

Table 2: Descriptive Statistics (Source: Authors Work)

According to the above table (Refer Tab_2), the Mean values of all variables are more than 4, indicating that on average, the respondents have answered 'Agree' to most of the items. The maximum and minimum values show that at least one respondent has rated the items as 'Strongly Agree' for all variables, and none have 'Strongly Disagreed' to any of the items. However, for User Involvement and Satisfaction, and Change Management practices; some have 'Disagreed' with certain items, where none have 'Disagreed' to any item under Top Management Support, and the success of ERP Implementation. Further, the standard deviation values indicate less volatility and no major deviations in data.

4.2. Top Management Support and ERP Implementation Success

When tested for the relationship between Top Management Support and the success of ERP Implementation, it was found that there is a significant relationship between the two, and that the relationship is both positive and strong ($r = 0.722$, $p < 0.01$) (Refer Tab_3). This indicates that when high support is received by the Top Management of Brown and Company PLC towards ERP, the success of its implementation is high. On the other hand, Regression Analysis showed that the Top Management Support positively influences the success of ERP Implementation (Beta = 0.500, $p < 0.01$) (Refer Tab_4). This means that when ERP Implementation receives support from the Top Management of the organization, it influences the ERP process to be successful. Accordingly, the first Hypothesis, *HA_1: Top Management Support has a positive impact on the success of ERP Implementation* is supported.

As an ERP Project could entirely fail due to employee resistance, support of a company's Top Management is a critical component for the success of ERP Implementation (Basir, Vakilian & Mobarakabadi, 2014). These findings seem to support previous empirical research as (Motwani, Subramanian & Gopalakrishna, 2005) found positive relationships between Top Management Support and the success of ERP Implementation. As the key users of ERP of the company seem to believe that the support of the Top Management is highly important for the success of ERP Implementation, and that the Top Management should clearly define proper goals and have effective communication. Further, this suggests that the Top Management needs to ensure that they engage in the ERP process in a proactive manner (Shao, Feng & Hu, 2017), plan and monitor the ERP project (Bhatti, 2005), allocate sufficient resources, and provide leadership (Al-Fawaz, Al-Salti & Eldabi, 2008); to ensure that they are successfully implemented and carried out in the long-term.

4.3. User Involvement & Satisfaction and ERP Implementation Success

The results show that there is a moderate and a positive relationship between User Involvement and Satisfaction, and the success of ERP Implementation ($r = 0.673$, $p < 0.01$) (Refer Tab_3). This means that when the User Involvement and Satisfaction is high in the company with respect to ERP Implementation, success of its implementation becomes high. Results from the Regression Analysis showed that there is a positive impact from User Involvement and Satisfaction on the success of ERP Implementation (Beta = 0.371, $p < 0.01$) (Refer Tab_4). This indicates that, when the users of ERP are more involved and are satisfied, it tends to influence its implementation to be successful at Brown and Company PLC. Consequently, the second hypothesis, *HA_2: User Involvement and Satisfaction* has a positive impact on the success of ERP Implementation is supported.

The findings suggest that high User Involvement in the ERP Implementation process increases the success of its implementation, and that, when the employees are satisfied with the process, it tends to improve the chance of successful ERP Implementation. User Participation and Involvement helps understand how the ERP Platform is performing according to various user needs (Basir, Vakilian & Mobarakabadi, 2014), where the key users of ERP in the company perceive that user involvement in each phase of the project is important for its success, and that user training and education to play a major role in the success of ERP Implementation. Also, supporting the claims of (Pries-Heje, 2008) and (Gyampah & Salam, 2004); when users are allowed to perform tests in the ERP system before it gets implemented, and the users perceive that better communication between users and the project team is in place; the success of ERP Implementation at the organization becomes high.

4.4. Change Management Practices and ERP Implementation Success

The key users of ERP at Brown and Company PLC, data revealed that Change Management Practices do not relate to the success of ERP Implementation. The correlations between these variables were also found to be weak and insignificant ($r = 0.121$, $p > 0.05$) (Refer Tab_3). As may then expected, Change Management Practices did not significantly influence the success of ERP Implementation for the organization (Beta = 0.047, $p > 0.05$) (Refer Tab_4). These findings provided lack of support for the third hypothesis, *HA_3: Change Management practices have a positive impact on the success of ERP Implementation* , which indicated that there is no relationship as well as there is no influence from the Change Management practices of Brown and Company PLC for the success of their ERP Implementation.

Even though a positive impact from Change Management practices on the success in ERP Implementation was assumed (HA_3) as literature (Newmann, 2020; Matende & Ogao, 2013; Bhatti, 2005; Aladwani, 2001) demonstrated; the findings suggested otherwise. This means that the key users of ERP are indifferent to whether there exist better Change Management practices or not, on the success of ERP Implementations. The users do not believe that Change Management practices play a major role in ERP Implementation, and do not perceive that ERP Implementation success depends on how well the Change Management team communicated the reasons for the change. Further, even if the Change Management team considered input from a variety of people during the implementation, and the team was helpful in managing change; the users of ERP at Brown and Company PLC may not think that it influences ERP Implementation success. The results may vary from previous findings due to the contextual differences, or due to perceptions of the key users of ERP with regards to Change Management practices and their effectiveness, which requires further investigation in the future.

		TMS	UIS	CMP	SEI
TMS	Pearson Correlation	1	.593**	.049	**.722****
	Sig. (2-tailed)		.000	.672	.000
	N	78	78	78	78
UIS	Pearson Correlation	.593**	1	.134	**.673****
	Sig. (2-tailed)	.000		.243	.000
	N	78	78	78	78
CMP	Pearson Correlation	.049	.134	1	**.121**
	Sig. (2-tailed)	.672	.243		.290
	N	78	78	78	78
SEI	Pearson Correlation	.722**	.673**	.121	1
	Sig. (2-tailed)	.000	.000	.290	
	N	78	78	78	78

Table 3: Correlation Matrix (Source: Authors Work)

TMS = Top Management Support/ **UIS** = User Involvement and Satisfaction/ **CMP** = Change Management Practices/ **SEI** = Success of ERP Implementation
[N = 78 / ** p < .001]

	B	Std. Error	Beta
TMS	.476	.085	.500**
UIS	.330	.080	.371**
CMP	.054	.083	.047

Table 4: Regression Analysis (Authors Work)

TMS = Top Management Support/ **UIS** = User Involvement and Satisfaction/ **CMP** = Change Management Practices/ **SEI** = Success of ERP Implementation
[N = 78 / ** p < .001]

Based on the results, (Table_5) presents the summary of Hypotheses tested.

Critical Factor	Hypothesis (H0)	P value	Decision (H0)
Top Management Support	**$H0_1$:** Top Management Support does not have a positive impact on the success of ERP implementation.	0.000	Reject
User Involvement and Satisfaction	**$H0_2$:** User Involvement and Satisfaction does not have a positive impact on the success of ERP implementation.	0.000	Reject
Change Management Practices	**$H0_3$:** Change Management Practices does not have a positive impact on the success of ERP implementation.	0.518	Do not reject

Table 5:Summary of Hypotheses Testing

5. CONCLUSION

The objective of this study was to investigate how various factors contributed to the success of ERP Implementation at Brown and Company PLC. Hence, this research firstly analyzed how Top Management Support impacted the success of ERP Implementation. Secondly, it tested the impact of User Involvement and Satisfaction against ERP implementation and thirdly the effects of Change Management Practices on the success of ERP Implementation at Brown and Company PLC. Surprisingly, only the *first two hypotheses were supported* where significant positive relationships existed between Top Management Support and the success of ERP implementation. Further, one of the major findings included that Top Management Support was also able to predict the success of ERP Implementation at Brown and Company PLC. The second, major finding is that User Involvement and Satisfaction also positively correlated with the success of ERP Implementation and was found to be able to influence it. However, contradictory to what was hypothesized, Brown and Company PLC's Change Management practices during the ERP implementation was not perceived to be correlated with the success of ERP implementation and neither did it have any predictive power.

A few implications for practitioners and researchers can be drawn from the results of this study. For instance, the project team and management of the organizations need to pay attention to the role played by Top Management when initiating ERP Implementations or upgrades. As the findings suggest, Top Management can have a major influence in guiding the project towards success. Employee resistance towards change initiatives could be prevented through Top Management Support and Involvement from the first phases of the project. Further, clearly defined goals, clear communication of the project requirements, timelines, and resources allocation through effective leadership from the top management can aid organizations to successfully implement ERP Systems. Secondly, an important aspect is to comprehend how end-user and stakeholder involvement could lead to generating feedback and assuring the satisfaction of them will help ERP Implementations to become successful. This means that organizations need to pay attention to the end users training requirements prior to launching ERP Systems. Providing sufficient training could lead to better success rates of the ERP Implementations. However, the organizational cultural setting, the scope of the ERP Implementation project, leadership

styles and employee resistance could affect the success of implementation of ERP projects.

As with any research, there are a few limitations that must be noted. Firstly, the findings of this study cannot be generalized as the number of responses is limited, and due to the fact that data was collected only from one organization in Sri Lanka. The data was quantitative in nature; hence, social dynamics were not captured. In the future, researchers can consider a mixed methods approach where interviews are included with key stakeholders, or focus group studies can be conducted with end users for example. Future research also can investigate how the success of ERP Implementation could be affected due to the critical factors, by including mediating variables such as leadership styles, or the organizational/ national cultural aspects.

5.1.Recommendations

Base on the results of the research study, the researcher has recommended few concerns in order to establish a successful ERP implementation phase for upcoming phase-outs or future implementations in Browns Group PLC.

5.1.1. Maintain realistic ways to implement ERP Platforms.

For future work, ERP researchers should try and find realistic ways to plan and motivate human resources, define and clarify the skills required by the ERP development team, management approaches used before and after the implementation of ERP.

- ✓ **Selecting a proper ERP Platform.** When selecting a proper ERP Platform for the organization, First the company should check the company objectives and need to check whether those objectives can be aligned with the ERP Implementations. Then the company should implement BPR (Business Process Reengineering) to meet the organizational objectives. It's also a good idea to make sure that the cost of customizations results in benefits that justify the extra cost.

- ✓ **Top Management needs to have proper solutions to mitigate risks.** In the majority of ERP implementations, top management will assign a project team to oversee all aspects of the project. As a result, due to a lack of proper guidance from the top management, some conflicts can occur. Therefore, it's crucial to maintain a proper project plan for resolving conflicts and mitigating undesirable risks.

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