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Assessing the success of Information Systems usage in Government Organizations evidence from Jaffna District, Sri Lanka

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Abstract
Information system plays a major role in the today's business and its success. The increased use of information s ystems has led to several changes in both the private and public sectors. Public sector organizations in Sri Lank a have been rapidly implementing information technology aligning with the recent e-government initiatives. Stud ies investigating the utilization and effectiveness of information systems within the specific context of Sri Lanka a re limited. Therefore, this study aims to assess the success of information system usage in the government sector organizations in Sri Lanka. A sample of 100 employees in government organizations in the Jaffna district was se lected using random sampling. A questionnaire was issued in the data collection. Data analysis consists of descr iptive statistics, correlation analysis and multiple linear regression analysis. The results reveal that system quali ty, information quality and service quality have relationship on the success of information system usage r=0.525 , r=0.470, and 0.449 at significant level 0.01. This study assists the government in enhancing the quality of user experience in information systems. Additionally, this study only consider three variables related to success of inf ormation system. Then future researchers can integrate the more variables presence in the literature and also ca n undertake the result beyond the Jaffna district, in Sri Lanka.

Key words: *system quality, information quality, service quality, information system success, government sector*

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I. INTRODUCTION

With the emergence of new technology people and organizations are using the information system to facilitate the various activities. Today, Information Systems (IS) has a critical role to organizations success, where globalization, digital economics, and digital organizations took place. The weakness of IS considered as a dangerous phenomenon on organizational success in general. Furthermore, the inquiry is not whether the organizations should have IS or not, but the organizations should have an effective Information System. The increased use of information systems has led to several changes in both the private and public sectors. The private sector organizations use information systems in their business to gain the competitive advantages and to improve their profit. Badamas (2014) highlighted that no business organization can survive without IS in global business environment. In addition, Torkestani and Mazloomi (2014) emphasized that IS were the great solutions for issues and challenges in the business environment. There is a clearly identifiable difference in the IS being implemented in public sector compared to those in private organizations particularly in developing countries (Rosacker & Olson, 2008). Due to many reasons, the implementation of IS in public sector organizations is still lagging behind.

However, now a days in many developing countries, public sector organization are adopting IS in their activities. For instance, Sri Lanka has introduced number information systems like CIGAS and payroll in the Government sector organizations. But after implementing the IS, effective use of the systems is in doubt. The Government sector organization in Sri Lanka investments in Information Communication Technology increased rapidly in the past years. Even though, acceptance and quality of the IS among the people is unsatisfactory.

Sri Lanka is having highly literate population. Computer literacy percentage has been rapidly increased during last decades. For example computer literacy percentage among the employed population has been 64.5% (Department of Census and Statistics, 2020). Even though it is confusing that why the effectiveness of Information Syatem is ineffective.

Therefore, this study is to identify the factors that effect on the success of use of IS in government sector organizations with special reference to Jaffna district of Sri Lanka. Because Jaffna population is 51% in the Northern Province. Then this sample will represent the population of Northern Province. Further, the few studies

were conducted by authors in the area of e-government system and the success of IS, mainly in Sri Lanka. Therefore, the researchers attempt to assess the success of IS usage in Government Organizations evidence from Jaffna District, Sri Lanka.

RESEARCH PROBLEM AND PROBLEM STATEMENT

Many organizations are progressively investing more in information systems as budgets surge, driven by competitive and economic pressures. Information systems, leveraging technology, facilitate job performance and support decision-making, communication, and knowledge management. This emphasis enables organizations to optimize operations efficiently and adapt to dynamic market conditions.

Information Systems of the private sector consider overall activities and some of them are really enterprise resource planning systems and its consequences higher quality of such systems. Mostly, Government sector organizations are doing its accounting activities in information system like CIGAS Accounting and GPS Payroll in Central Government and Provincial Council, Ministries, Departments and their sub units. Pushpakumara et al. (2014) revealed that organizations in local context motivate their subordinates to proper use of information systems and most of them mainly considered only a financial activity and those are ready-made system provided by the central government of Sri Lanka. The study further emphasized that some systems have been developed by employees voluntarily and many organizations used spreadsheets for their financial activities in the organizations. This means that well qualified people would not engaged in developing and using such systems due to less payments and self-motivation in the public sector organizations.

This study systematically investigates two potential causes for the gap: the inadequate translation of academic knowledge on accounting information systems into practical application, and the inefficient use of the information system in Government sector. Based on the problem the following research question is proposed:

"How far information system impact on success of information system of government organizations in Jaffna district of Sri Lanka?"

OBJECTIVE OF THE STUDY

The following main objective is formulated;

To identify the factors affecting the success of use of information systems of government organizations in Jaffna district, Sri Lanka.

II. REVIEW OF LITERATURE

The changing entity of the business organization is the rapid advancement of their Information and Communication Technology and adoption of the information systems. According to the Loudon and Loudon (2009) information technology and information systems have revolutionized the business organizations becoming the largest components of capital investment of their total investment. Further, they mentioned that "information systems are changing businesses and the visible results of them include the increasing use of mobile phones and wireless devices, a massive ship towards online news and information, booming e-commerce and Internet advertising and new federal security and accounting laws that addressed issues raised by the exponential growth of digital information".

G.K. Senavirathne (2020) experimented a study on Impact of information systems quality for the performance of the public sector organizations in Western Province, Sri Lanka. Researcher proved that the system quality of the IS positively impacts on the organization performance. According to the findings of the research, there is no negative impact of IS on organization performance. That means IS are better than manual or traditional data storing methods and IS are a significant element to improve the organizational performance.

Munasingae P.G (2016) conducted a study on success of information system usage in Government organization in the North Central Province in Sri Lanka. This study found that there is a significant positive relationship between system quality, service quality and information quality on success of information system.

Torkestani & Mazloomi (2014) have considered the success of information system dimension as system quality and information quality. Further, the study state that the systems quality of information systems' as the desirable characteristics such as ease of use, system flexibility, system reliability, and ease of learning, as well as system features of intuitiveness, sophistication, flexibility, and response times. Information quality is defined as the desirable characteristics of the system outputs such as quality of reports with the relevance, understandability, accuracy, conciseness, completeness, currency, timeliness, and usability.

Success of an Information System is often viewed in relation to its return on investment (Dehning & Richardson, 2002). Some authors view IS success in terms of user satisfaction (Ives, Olson, & Baroudi, 1983; Seddon & Kiew, 2007; Zviran & Erlich, 2003). For example, Seddon and Kiew (2007) argued that IS success should be measured according to the goals and the determinents of success are dependent on the context. Further, SatuMaria and Maiju (n.d.), stated that, IS success is dependent on its stakeholders. DeLone and McLean (1992)

identified six major factors that affect IS success, namely, system quality, information quality, use, user satisfaction, individual impact, and organizational impact. They further emphasized the necessity of considering the effect of contingency variables and characteristics of the system in assessing IS success. For example, they identified organizational structure, size, and technology as key contingency variables. Davis (1993) identified Proceedings of the 3rd International Conference on Management and Economics (ICME 2014) user acceptance as a strong determinant of IS success because of the importance of the feedback of IS users. On the other hand, (Petter, DeLone, & McLean, 2008) categorize the determinants of IS success as human, organizational and environmental factors while some researchers like Romi Ismail (2011) as investigated the impact of organizational culture on IS success. Li (1997) has identified 46 factors that affect IS success.

Hussein et al. (2007) examined the relationship between system quality, information quality, perceived usefulness and information system satisfaction and found positive relationships between the variables of the use of information systems.

Petter et al. (2008) defined system use as the degree and manner in which staff and customers utilize the capabilities of an information system with amount of use, frequency of use, nature of use, appropriateness of use, extent of use, and purpose of use. Also, quality of user characteristics is a measurement of success in information systems.

Pushpakumaraet al. (2014) studied information system success in Sri Lanka focusing three determinants systems quality, service quality and user quality. System quality refers as to easiness of the system for the potential user; service quality refers to the different services available within the information systems and user quality refers to the user readiness for using the information systems.

Based on the above empirical evidence, the following hypotheses were developed.

H1: System Quality has a positive significant impact on success of information system

H2: Information Quality has a positive significant impact on success of information system

H3: Service Quality has a positive significant impact on success of information system

III. RESEARCH METHODOLOGY

Conceptual Model

According to the DeLone and McLean (1992 ;2003) IS Success Model, the researcher was proposed the conceptual model for this study.

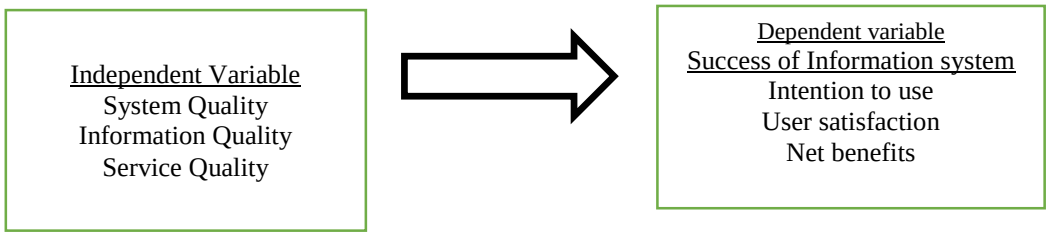

Figure 01- Conceptual model

Source: Updated model of De Lone and McLean (1992; 2003)

Population and sampling Technique

The population of the study is the 130 information system users who work in the government sector organization in Jaffna district. A sample of 97 respondents who are using the information systems of the organization will be selected from the target group (Krejcie & Morgan 1970) using the random sampling method.

Data sources and instruments

The study uses a quantitative approach to examine the factors that effect on success of use of information systems which are used in government organizations in the Jaffna district in Sri Lanka. The primary data will be used for this study. To evaluate the use of success of information systems the researcher will be designed a structured questionnaire with composition of two parts as, first part is collecting the demographic variable and second is data relating to the dimension of information system. Demographic information with closed ended question and variables is with five-point Likert scale ranging from, strongly disagree to Strongly Agree, ranging from 1 to 5**.**

Mode of analysis

Validity and Reliability of research instruments to achieve reliability, the database will be verified for accuracy and completeness of all the entries. Validity will be checked by ensuring relevant literatures are reviewed to understand and correctly measure the concepts under study. In order to ensure that the questions in the

questionnaire reliably measures the same latent variable, the Cronbach's alpha was run using the Statistical Package of Social Science and values ≥ 0.7 will be considered acceptable (Hair, et al., 2005). In the data analysis, descriptive statistics, Pearson correlation coefficient and multiple linear regression analysis will be used to test the hypothesis and to find out the success of information system of government organization in Jaffna district by using Statistical Package for Social Science 20.0.

IV. RESULT AND DISCUSSION

Reliability Statistics

Cronbach's Alpha	N of Items
.714	18

Source: Survey data

The table 01 shows that reliability of the total items is 0.714. Therefore, all constructs recorded Cronbach's Alpha values well over 0.7(Hair, et al., 2005) which is considered as the general cutoff in this type of study. Thus, reliability of each construct is accepted for the present study.

Descriptive analysis

Table 02- Descriptive Statistics

		System quality	Service quality	Information Quality	Information Success
N	Valid	97	97	97	97
	Missing	0	0	0	0
Mean		4.0125	3.9667	4.1900	4.0789
Deviation		.23131	.20922	.33166	.18369

Source: Survey data

The table 02 represents that mean and standard deviation of variables. This study shows that mean of system quality, information quality, and service quality and information system success are 4.012, 3.966, 4.190 and 4.078 respectively which indicate that respondents rated system quality, information quality, and service quality positively. The standard deviations suggest relatively low variability within the responses, implying a certain degree of agreement among the participants. The higher mean values for information quality and information system success compared to system and service quality suggest that the information-related aspects are more positively evaluated. These findings imply that the information system is perceived favorably overall, but potential areas for improvement may exist in system and service quality.

Correlation analysis

The Pearson correlation was conducted to examine the relationship between independent variables and information system success.

Table 03 Correlations

		System quality	Service quality	Information quality	IS success
IS success	Pearson Correlation	.525**	.449**	.470**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	97	97	97	97

Source: Survey data

As shown in the table 03, Correlation analysis indicates a positive and statistically significant correlation between the variables at the significance level of 0.01. System indicators; system quality, information quality and service quality depict positive -correlations with success of information system.

The correlation results reveal that system quality is positively correlated with success of use of information systems ($r=0.525$, $p<0.01$). The results further suggest that there is a positive and significance relationship between information quality and success of use of information systems ($r=0.470$, $p<0.01$). The service quality is also positively correlated with success of use of information systems ($r=0.449$, $p<0.01$).

Regression analysis

Table 04 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.933[a]	.870	.869	.06657

a. Predictors: (Constant), Ind

Source: Survey data

The table 04 shows that Value of R. Square is .870 shows that 87% variation in success of information system due to the independent variables such as system quality, information quality and service quality.

Table 05 Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.390	.115		-3.391	.001
	System Quality	.465	.015	.749	31.611	.000
	Service Quality	.399	.021	.454	19.083	.000
	Information Quality	.235	.013	.425	17.880	.000

a. Dependent Variable: Information system success

As shown in the table 05, Regression coefficient indicates that there is a positive effect of system quality on the success of use of information systems (β=0.465, $p<0.01$). Regression coefficient of 0.235 also signifies that information quality has a positive effect on success of use of information systems ($p<0.01$).In addition to that success of use of information systems is also influenced by service quality. (β=0.399, $p<0.01$). Thus, every unit increase in system quality, information quality and service quality of information systems is expected to increase success of information systems with the degree 0.465, 0.235 & 0.399 respectively. Therefore, all the hypotheses H1, H2, H1b and H3 were accepted. (DeLone and McLean (1992), Pushpakumaraet al. (2014)).

V. CONCLUSION

Information systems are crucial assets for business organizations, prompting substantial investments in their development and implementation. In line with this, the government sector of Sri Lanka has adopted information systems to streamline the handling of routine tasks in government sectors, as part of the e-government initiative. A recent study focused on three key independent variables as system quality, service quality and information quality in relation to the dependent variable of the success of information system usage. The study involved a sample of 97 information system users from government sector organizations. The results indicate that system quality, service quality and information quality are important factors in supporting the success of use of information systems in the Jaffna district, Sri Lanka.

This study assists the government in enhancing the quality of user experience in information systems. Additionally, the government can ensure the provision of accurate and updated information to improve the quality of information and the overall system. It is crucial for the government to analyze stakeholders' requirements before implementing the system, ensuring its availability for users at all times. Moreover, regular training should be provided to information system users to update their capabilities. Therefore, the government can provide vital service facilities, such as technical training programs, infrastructural development, and the provision of continuous support through help desks and qualified technical personnel, is imperative for ensuring the effective and continuous implementation of Information Systems within the public sector.

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