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Factors Influencing the Attitude of Stakeholders Towards the Adoption of E-Procurement, A Special Reference to Eastern Provincial Council Organizations in Sri Lanka.

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ABSTRACT

This study investigated the factors influencing stakeholders' attitudes towards e-procurement adoption in the Eastern Provincial Council Organizations of Sri Lanka. The research questions and objectives were formulated to find out the extent of the relative influence of top-level executives' support, employees' ICT (Information and Communication Technology) competency, and suppliers' ICT readiness, which were identified as the three major factors from the literature review, on the overall stakeholders' attitudes towards the adoption of e-procurement replacing the traditional manual system. The study used a cross-sectional study design, and all variables were measured with the data collected through standard attitudinal questionnaires from a sample of three distinct study populations: Top-level executive officers, Employees involved in procurement, and Registered suppliers attached to more than 40 organizations under the purview of the Eastern Provincial Council. The total number of participants in the study was 450. They were selected from the three groups in an equal amount of 150. The data collected were analyzed using multiple regression analysis with the PSPP. The unit of analysis was a group comprised of three types of individual stakeholders (a top-level executive, a procurement employee, and a registered supplier).

The study found that top-level executives' support, employees' ICT competency, and suppliers' ICT readiness significantly and positively influence stakeholders' attitudes towards e-procurement adoption. The results of multi regression analysis revealed that the Top Level Executives' Support (TES) had the strongest significant effect on the overall Stakeholders' Attitude towards the E-Procurement system, with a standardized beta of 0.36. The Employees' ICT Competencies (EIC) also had a significant effect on the overall Stakeholders' Attitude towards the E-Procurement system, with a standardized beta of 0.31. Suppliers' ICT Readiness (SIR) too had a significant effect on the Stakeholders' Attitude towards the E-Procurement system, with a standardized beta of 0.29. As indicated by the R^2 value of the model summary, these three factors have jointly explained a considerable percentage of variations (sixty-four) in the overall attitudes of stakeholders towards adopting e-procurement. Based on these findings, the study recommends that the Eastern Provincial Council Organizations focus on conducting ICT training programs to enhance employees' ICT competency and collaborate with suppliers to improve their ICT readiness. Additionally, the support of top-level executives is crucial in providing the necessary resources and leadership for the successful adoption of e-procurement. This study contributes to the existing body of knowledge in the field of e-procurement adoption and guiding policy-making with a piece of original empirical evidence obtained by the researchers from the study population among the stakeholders of the Eastern Provincial Council, Sri Lanka, which is a large-scale public entity in the country. The model used in this study has explained only 64% of the variations in the stakeholders' attitude, leaving remaining 36% un explained. Future researchers can add more factors to this model by considering the perception of the many more groups of stakeholders on the availability of infrastructure, government support, sustainability necessities, and so on.

Keywords: E-Procurement, Attitude, ICT Competency, ICT Readiness, Executive Support.

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INTRODUCTION

Procurement plays a major role in government institutions' internal organizational development activities and development projects. According to the annual government budgets, government institutions of Sri Lanka spend millions of amounts of money annually to procure construction, goods, and services. The Ministry of Finance of Sri Lanka published procurement guidelines and a procurement manual to guide the procurement entities to ensure meaningful procurement in government organizations of Sri Lanka. Although procurement guidelines and procurement manuals were published by the Finance Ministry of Sri Lanka to guide a meaningful procurement, those documents describe manual procurement only.

However, e-procurement is a growing trend in the public sector of the world [3]. Implementation of e-procurement systems ensures reduced administrative costs, reduced transaction costs, and improved competition among small and medium enterprises, and is perceived as a weapon to combat in the public sectors in many countries [3]. Therefore, the Ministry of Finance and Economic Development of Sri Lanka has instructed to follow e-government procurement in public sectors of Sri Lanka via the PFD circular no: -08/2019 and they have introduced a website to facilitate the government institutions to do the e-government procurement in Sri Lanka. Government institutions can do the e-procurement via the above-mentioned website.

The Eastern Provincial Council is a government institution of Sri Lanka. Five Provincial Ministries, a Governor's Secretariat, a Chief Secretary's Secretariat, and a Provincial Council Secretariat are the major institutions in the Provincial Council entity. 17 Departments, 04 sub-national statutory bodies, and a regulatory body that comes under the Provincial ministries are functioning under the Eastern Provincial Council. In addition to those entities, 10 other supporting institutions operate under the Chief Secretary's Secretariat and 2 more institutions function under the Governor's Secretariat.

Public sector organizations are expected to serve the public by efficiently spending taxpayers' money, managing budgets according to legislative and administrative orders, and maintaining a system of checks [3]. Therefore, e-procurement plays an increasingly important role in the public sector of the world. However, the utilization of e-procurement in Eastern Provincial Council Institutions is at zero level. According to the pilot study which was conducted by the researchers, the number of total procurements which were done by Eastern Provincial institutions were 2110 in the year 2020 and 2485 in the year 2021. Further, the pilot study revealed that e-procurements that were conducted by Eastern Provincial institutions in both years 2020 and 2021 were 0.00 in number.

Automation of an organization's procurement process by using web-based technology is called e-procurement [44]. Further, the e-procurement system is a web-based collaborative system that facilitates all stages of the procurement cycle including chain automation, strategic sourcing, and supplier rationalization, and reduces the cycle time and transaction cost. Further, an Information system is an organized combination of people, hardware, software, communications networks, and data resources that is used to collect, transform, and disseminate information [16].

Accordingly, e-procurement systems also can be considered information systems. Therefore, the causes of the failures or non-utilization of the information system can be considered as the causes of the failure or non-utilization of the e-procurement systems. Moreover, the information system fails due to various factors which are functioning individually or together to create the failure situation of the information system [16]. Multiple factors influence the adoption of technology such as the adopter, the technology, and the ecosystem in which they function [59].

According to the existing literature, technology, infrastructure, environment, resource constraints, organizational characteristics, and management characteristics are the factors that influence the success and failure of an e-procurement system [44]. Likewise, employee competencies, inadequate legal framework, inadequate technological infrastructure, and security of procurement transaction data are the challenges to the implementation of the e-procurement system [47]. Information Communication Technology tools are very important to implement e-procurement. Therefore, it is very important to ensure the availability of ICT tools for the success of the e-procurement system implementation in the organization [44]. Further, top management

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

influence, information technology, staff training, and supplier capacity are the factors that affect the implementation of an e-procurement system [47].

Reference [53] stated that the successful adoption of the e-procurement system is highly influenced by the top management and employee's knowledge while weak procurement guidelines, weak legal framework, weak ICT infrastructure, and lack of IT knowledge and experiences of the employees are the barriers to the e-procurement system adoption in the public institutions [53]. Even though managerial skills and management support play a major role in implementing an e-procurement system in an organization, the staff's commitment is also very important to the implementation of the e-procurement system [47]. The relationship between e-procurement implementation and skill, supplier, and infrastructure is very strong [47].

Therefore, necessary training on the e-procurement system is very important to improve the overall knowledge of the staff, improve the work as a team, and work independently which ensures the success of the implementation of the e-procurement system [47]. Similarly, the supplier's capacity concerning the e-procurement system shows a positive relationship with the success of the implementation of the e-procurement system [47]. Suppliers are one of the important parts of the environmental factors concerning the e-procurement system's adoption and they should know the benefits process of the e-procurement system as early as possible [67].

Reference [40] stated that three types of factors influencing the implementation of the e-procurement system: Lack of skills and knowledge of E-procurement; Infrastructure affordability of e-procurement system; Supplier compatibility. Both suppliers and purchasers have to have the skills to operate the e-procurement system for the successful implementation of the e-procurement system [40].

In addition to these factors highlighted in the literature, the attitude of stakeholders like top-level executives, employees who are accustomed with manual procurement, and suppliers towards switching to adopting e-procurement system is to be recognized as a crucial determinant for successful implementation of the new system. Top-level executives' support, the employees' ICT level, and suppliers' ICT readiness are hypothesized from the theoretical framework and empirical observations of the phenomena as the predictors of their attitudes to favor or unsavory to the adoption e-procurement system. It would be more relevant to measure the attitude of those major stakeholders and its determinants before investing on and implementing e-procurement system in organizations to appraise its feasibility.

Therefore, an empirical and systematic research applying the scientific methodology is required to identify the factors influencing the attitude of stakeholders towards the adoption of e-procurement in the Eastern Provincial Council Institutions of Sri Lanka, where the implementation of e-procurement is still challenging.

Problem Statement

From the background described above, the problem of the study was defined as "What are the factors influencing the attitudes of stakeholders towards the adoption of e-procurement system in the Eastern Provincial Council Organizations of Sri Lanka"?

Research Questions

Based on the research problem identified above, the following research questions were raised for the study:

1. To what extent does the support of top-level executives influence the attitudes of stakeholders towards the adoption of e-procurement system in the Eastern Provincial Council Institutions of Sri Lanka?

2. To what extent does the ICT competency of employees influence the attitudes of stakeholders towards the adoption of e-procurement system in the Eastern Provincial Council Institutions of Sri Lanka?

3. To what extent does the Suppliers' ICT readiness influence stakeholders' attitudes towards adopting e-procurement in the Eastern Provincial Council Institutions of Sri Lanka?

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

Objectives of the Study

Based on the research questions raised above, the following objectives for the study were set for the study:

1. To find out the extent to which the support of Top-level Executives influences the attitudes of stakeholders towards the adoption of e-procurement system in the Eastern Provincial Council Organizations of Sri Lanka.

2. To find out the extent to which the ICT competency of employees influences the attitudes of stakeholders towards the adoption of e-procurement system in the Eastern Provincial Council Organizations of Sri Lanka.

3. To find out the extent to which the ICT readiness of Suppliers influences the attitudes of stakeholders towards the adoption of e-procurement system in the Eastern Provincial Council Organizations of Sri Lanka.

LITERATURE REVIEW

The management of the organization sets organizational goals as strategic objectives to achieve the desired results and increase employee effort [52]. The ability to effectively implement strategies to achieve institutional objectives leads to organizational success which depends on the organizational performance [1]. Supply chain management is one of the crucial business strategies that can make it easier for an organization to attain its performance objective [21]. Further, the purchasing function is a key component of the supply chain that is in line with the strategic goals of the business entity [56]. As a result, choices made regarding purchases could significantly affect the company’s final product and overall business performance [56].

The standardization of purchasing processes improves the accuracy and effectiveness of the purchasing, which results in better purchasing performance, and frees up purchasing managers to focus more time on "non-routine" tasks like cost/value analysis, supplier development, and concurrent engineering [56]. Therefore, most business entities and public organizations follow procurement procedures as a standard purchasing procedure. The major concern of the regulations in the procurement procedure is that can prevent corruption in public procurement by prescribing formal decision processes to ensure the spending of taxpayers' money to do so efficiently and getting the best possible value for money [33].

Similarly, public procurement plays an important role in service delivery and the performance of government departments [12]. The procurement guidelines are the Government of Sri Lanka's procurement policies, whereas the procurement manual explains in greater detail how specific aspects of procurement should be handled by the Guidelines-2006: the purpose of this manual is to provide assistance, advice, directions, and procedures to be followed by public sector Procurement Entities when conducting procurement activities (Procurement Manual, 2006). Moreover, the traditional procurement system in Sri Lanka suffered due to lots of negative impacts such as imbalance of information, high cost in procurement transactions, high probability of corruption, and anti-competitive practices [67].

Therefore, Sri Lanka's cabinet of ministers approved an E-Government Policy in 2009 to facilitate the upgrade of information technology infrastructure capacity to improve the efficiency and effectiveness of the public procurement process [18]. As a result, the Sri Lankan government launched "Promise. lk" as an electronic procurement system that applies to all of Sri Lanka's government institutions [67]. Reference [53] stated that the adoption of e-procurement systems is dependent on three categories of factors: technological, organizational, and environmental [53]. Identifying the failure factors of the information system is very important to avoid failure of the information system [16].

Procurement

The process of acquiring goods and services from another party by following the accepted rules and regulations is called procurement [67]. Further, Reference [67] stated that procurement includes the purchase

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

of goods and services, the lease or hire purchase of goods and services, and the execution of the works [67]. Effective and proficient procurement processes can produce good results for purchasing in public sector institutions due to reduced lead times, savings, high-quality goods and continuity of supply, stakeholder satisfaction, and profit growth [31].

The public procurement is an internal device for domestic economic growth, job creation, and achieving strategic objectives including economic development, social inclusion, and sustainability [50]. Further, social return on investment in the public sector can be ensured through an independent procurement process [66]. Similarly, findings revealed that a well-regulated public procurement process has a direct impact on accelerating the country's sustainable development because the Public Procurement Process contributes to the budget of developing nations often large (about 20% of the GDP) [18]. Therefore, public procurement is a powerful tool for increasing government efficiency, decreasing public expenditure, and fostering economies, its design must include components such as the organization's strategy and policy, methods and procedures, personnel and organization, and information [50].

e-Procurement

The process of using IT systems for procurement tasks like sourcing, negotiating, ordering, receiving, and reviewing purchases is known as "e-procurement" [19]. Further, E-procurement is a type of Information and Communication Technology (ICT) application that is used in both the public and private sectors [53]. [18] stated that e-procurement is the proper advancement of the manual procurement process as a result of information technology development [18]. The public sector has adopted a variety of e-procurement solutions, ranging from the most basic e-journals, websites, or portals that provide information on the tender notices to more sophisticated ones like e-tendering, e-catalogues (buyer-side), e-marketplaces, and e-auctions [3].

There are several steps in the e-procurement process: e-information search, purchasing via e-catalogues, e-transaction, e-auction, e-tenders, and e-collaboration [18]. Finding new suppliers and products by using electronic mechanisms including e-magazines, and websites is considered an e-information search while "Simple electronic transactions" include using e-catalogues to make purchases, working with suppliers to place and manage orders, and getting access to their database of goods and services [18]. Electronic collaboration includes “sending documents to suppliers, doing collaborative online engineering with suppliers, and tracking goods purchased during transportation” [18].

Like other information systems, e-procurement systems are implemented in numerous organizations [3]. Therefore, it is important to mention that e-procurement systems are information systems. The information system is used to collect data, analyze the data and present the information and due to these activities, makes a significant contribution to the decision-making process [16]. Information systems and Information technology have become key tools to control the social and economic environment in a country [16]. Information systems are continuously being implemented in Sri Lanka because of their importance [16]. As a consequence, the Sri Lankan government has introduced an ideal information system called “promise” to e-procurement [67].

Influencing Factors of the Adoption of an e-Procurement System

E-procurement is described as the use of electronic data to facilitate the strategic, tactical, and operational aspects of procurement by the United Nations Global Marketplace [6]. It is pertinent to mention that others have yet to start the journey while some governments and institutions, particularly in developing sectors, still rely on the manual approach to procurement executions and transactions [6]. Further, e-procurement systems are one of the information systems which are implemented in many organizations [3]. To a greater extent, the software that stores, retrieves, and disseminates the information, thereby supporting people and organizations and helping them to do their work efficiently is called an information system [60].

In this context, it is recorded that many information systems fail in Sri Lanka [16]. Consequently, the Sri Lankan government has introduced an ideal information system called “promise” to e-procurement which is not utilized by most of the government organizations in Sri Lanka [67]. The strategic value of the e-procurement factor, e-procurement capability, e-procurement models, public trust, implementation and

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recommended measures, effectiveness, and user acceptance of new information systems, early supplier involvement in staff training, analysis of factors influencing the successful e-procurement implementation, management support, and organizational readiness are some other factors that have a significant impact on e-procurement implementation [57].

Moreover, concerns about technology adoption have been one of the main reasons why a suitable e-procurement system or platform hasn't been successfully adopted [6]. The lengthy learning curve involved makes it difficult to adopt or integrate a new technological system into an ongoing traditional or conservative process [6].

A. Influence of Support of the Top-level Executives on the Adoption of an e-Procurement System

The effort and resource support that is provided by the top management to adopt an innovation in the organization is called top management support [67]. The managerial skills and top management's support determine the successful implementation of e-procurement [47]. Studies show that if the top management is involved in the implementation of e-procurement thoroughly only, the e-procurement project can be successful [19]. To a greater extent, the adoption of an information system depends on the top management's support [27].

According to studies by some scholars, top management is a very important factor in both e-procurement implementation and adoption [53]. Further, top management can replace the existing process with the new requisite process for e-procurement adoption [53]. Similarly, top management's support is very important to ensure the resources needed to adopt the new technology or to expand its use are available and to overcome resistance to change [53]. Further, Reference [47] stated that top management is one of the influencing factors of e-procurement adoption [47].

It is crucial to confirm that the senior management has given their full support to the adoption of e-procurement to its success [27]. Therefore, senior management must pay close attention to and support efforts to ensure that the agency is fully aware of the procurement reform [65]. The executive management team is also in charge of developing the policies and strategies required to implement an e-procurement initiative, as well as setting the vision and goals, fostering group commitment to change in organizational structures and processes, and formulating the policies and strategies [65]. Reference [19] stated that innovation adoption is significantly influenced by the changing attitude of the top management [19]. However, even though top management plays a major role in the business process reengineering, top management is reluctant to change with respect to e-procurement implementation in several organizations [20].

A critical coordination within the organization that is necessary for effective e-procurement implementation should be created by the top management [49]. Consequently, allocating responsibility among the staff and supportive organizational structure by the top management greatly influence e-procurement adoption [27]. Reference [19] indicated that conflict resolution and facilitating an organization-wide strategic consensus related to e-procurement adoption can be handled by the top management [19].

Hence, the top management support helps to deliver the orientation on the implementation of e-procurement as well as help in increasing the skills to succeed [47]. To achieve these, top management has to get middle management support [47]. In contrast, top management determines the outcome of a successful project [67].

B. Influence of the ICT Competencies of the Employees on the Adoption of the e-Procurement System.

When people are knowledgeable and skilled in a given technology, organizations are more likely to accept and use it [53]. The adoption of e-procurement is more likely to occur when employees are knowledgeable [53]. Employees' lack of competency is one barrier that greatly impacts how e-procurement is implemented [57]. Moreover, public sector officials' lack of IT expertise and experience seems to be a major barrier to the implementation of e-procurement [53]. Without adequate IT understanding, e-procurement would be difficult to start [53].

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

Consequently, prior research has shown that when people are knowledgeable and skilled in technology, firms are more likely to accept and use it [53]. To a greater extent, computers, the Internet, and electronic delivery systems including radios, televisions, and projectors are only a few examples of information and communication technology (ICT) [15]. It is crucial to identify the staff members who are most suited to run the system [14]. Employee competence is infrequently produced by training as it is [14]. Therefore, the collaborators must possess the knowledge required to comprehend how the system works; otherwise, no amount of training will enable them to fully utilize the system's functions [14].

Because e-government systems involve intricate human-computer interfaces, organizations should inform and encourage users to gain the necessary skills and make a commitment to the adoption and sustainability of the e-government system [67]. Accordingly, it's simple to learn how to use e-procurement [67]. The adoption and enhanced use of ICT in procurement were recognized as being significantly influenced by ICT training and skill development, organizations' leadership commitment, and the availability of financial resources.

Further, several findings indicated that while implementing e-procurement, the aspects of education and training play a crucial role in human resources [67]. It's crucial that the team members who will utilize an information system, in the end, receive proper training before it is put into operation [14].

C. Influence of the ICT Readiness of the Suppliers on the Adoption of the e-procurement System.

User satisfaction positively impacts the success of e-procurement adoption [57]. Therefore, partners (suppliers and buyers) should prepare to communicate information or conduct transactions through electronic procurement [67]. Because users contribute positively if the system is effective at serving data and managing internal control [57]. It is pertinent to mention that suppliers must trust the organization's e-procurement system in order to engage in e-procurement [67]. Similarly, E-procurement deployment and supplier compatibility have a strong correlation [40].

The suppliers are the party that has the most to gain from an e-procurement solution's success [49]. However, many studies offer positive opinions on the subject, stating that suppliers might be reluctant to transact business electronically with public sector organizations because they are unsure of the benefits to be gained and they might view e-procurement as a way for these organizations to simply try to drive prices down [67]. Therefore, giving suppliers the chance to provide feedback will enable the public procurement department to track potential improvement areas and modify procedures as necessary [40].

Because many suppliers may be reluctant to conduct business electronically because they are unsure of the benefits to be obtained, including them early on, such as when designing a product, is crucial to maintaining high-quality products and healthy supplier relationships [40]. As early as feasible in the e-procurement implementation, suppliers must be informed and educated about the advantages that can be attained through a process of consultation [67]. Further, another aspect of the adoption of e-procurement is supplier preparedness to carry out purchase contracts based on automated processes [67]. The adoption of e-procurement is negatively impacted by supplier preparedness from the external environment [67]. Moreover, Reference [53] stated that the amount of suppliers' e-readiness may have an impact on how successfully an e-procurement activity is carried out, so effective communication with suppliers is crucial [67].

Therefore, suppliers should be included in every level of e-procurement adoption as it is negatively correlated with it in the Sri Lankan context by displaying the proposed solution to the supplier and addressing necessary revisions, difficulties, and concerns [67]. Every stage of the system implementation must include them [49]. Moreover, suppliers ought to be inspired to use the program and offer suggestions for its development [49]. The system ought to be created so that a less technologically knowledgeable supplier can utilize it easily and effectively [49].

Conceptualization of Variables

This study was a cross-sectional explanatory study. The main concepts of the study are the stakeholders' attitudes towards the adoption of the e-procurement system, which is the dependent variable, and the support

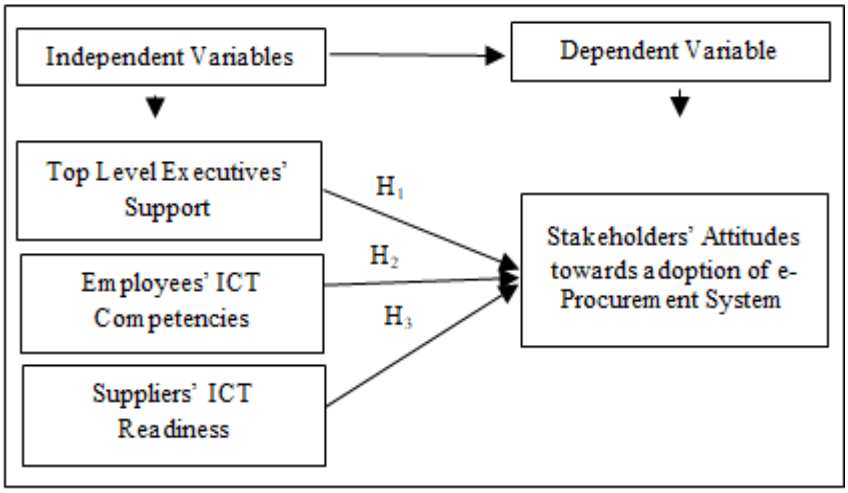
ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

of top-level executives, the ICT competency of employees, and suppliers' ICT readiness, which are independent variables. The stakeholders' attitudes towards the adoption of e-procurement are conceptually defined as the expression of stakeholders' behaviours which can influence their choice and their response to the adoption of an e-procurement system [35].

The support of top-level executives can conceptually be defined as the effort and resource support that the top-level executives provide to adopt an innovation in the organization [67]. The ICT competencies are conceptually defined as the ability to use ICT technology effectively and critically for work, play, education, and communication [28]. ICT skills, in contrast, include the ability to deal with information, communication, and knowledge issues in a digital world [28]. Reference [67] stated that Suppliers' ICT readiness to engage with the e-procurement system can be described as "the extent to which the suppliers are prepared to communicate the information or conduct transactions through electronic procurement" [67].

The Conceptual Framework is shown in Fig. 1. The Stakeholders' Attitudes are assumed to be the dependent concept. The support of top-level executives, the ICT competency of employees, and suppliers' ICT readiness are the assumed independent variables.

Fig. 1: Conceptual Framework



(Source: Developed by the researchers for the study purpose)

Stakeholders' Attitudes towards the adoption of the e-Procurement System

"The stakeholders' attitudes towards the adoption of the e-procurement system" is the dependent variable of the current study which is operationally defined as "the positive or negative stance that an individual holds towards a perform a target" [53]. In 1989, Reference [11] introduced the Technology Acceptance Model (TAM), a popular framework for understanding attitudes toward technology adoption, emphasizing 'Perceived Usefulness' and 'Perceived Ease of Use.

Top Level Executives' Support

The support of top-level executives for the adoption of the e-procurement system is operationally defined as "how much the top-level executives put efforts to develop the policies and strategies required to implement an e-procurement system, as well as setting targets, securing shared commitment for change in organizational structures and processes" [67]. Further, Provisions of resources, Structural arrangements, Communications, Expertise, and Power are identified as the operational dimension of the support of the top-level executives [2].

Employees' ICT Competencies

ICT competency refers to employees' usage of ICT-related knowledge, skills, and its benefits to collect, organize and share information in order to work, relax and communicate with people [25]. Further,

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

information, communication, content creation, safety, and problem-solving are the identified dimensions of the ICT competencies [13].

Suppliers' ICT Readiness

Suppliers' ICT Readiness refers to the extent to which the suppliers are willing to communicate information or conduct transactions through electronic procurement [67]. Further, ICT infrastructure, ICT Hardware and software, and people and human resources are the identified dimensions of the operational definition of the supplier's readiness to use the e-procurement variable [7].

Hypotheses

To answer the research questions of this study, the following hypotheses were formulated based on the literature review:

Impact of Top Level Executives' Support on Stakeholders' Attitudes to e-Procurement System.

A significant positive impact of Top Level Executives' Support on Stakeholders' Attitudes to the e-procurement System is hypothesized for this study based upon the previous empirical studies [53] - [47] as:

H_0: The Top-level Executives' Support has no impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations.

H_1: The Top-level Executives' Support has a significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations.

Impact of Employees' ICT Competencies on Stakeholders' Attitudes to e-Procurement System.

A significant positive impact of Employees' ICT Competencies on Stakeholders' Attitudes to the e-procurement System is hypothesized for this study based upon the previous empirical studies [7], [53], [25] - [26] as:

H_0: ICT Competencies of employees have no impact on favouring their attitudes towards the adoption of e-procurement system in the Eastern Provincial Council Organizations.

H_2: ICT Competencies of employees have a significant positive impact on favouring their attitudes towards the adoption of e-procurement systems in the Eastern Provincial Council Organizations.

Impact of Suppliers' ICT Readiness on Stakeholders' Attitudes to e-Procurement System.

A significant positive impact of Suppliers' ICT Readiness on Stakeholders' Attitudes to e-procurement System is hypothesized for this study based upon the previous empirical studies [7], [53], [25] - [26] as:

H_0: ICT Readiness of Suppliers has no impact on favouring their attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations.

H_3: ICT Readiness of Suppliers has a significant positive impact on favouring their attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations.

Operationalization of Variables

Stakeholders' attitudes towards the adoption of the e-procurement system were operationalized by identifying indicators which were measured using the five-point rating scale questionnaire. The indicators for this variable were the perceived Usefulness of e-procurement (Quality, Control, Speed, Support, Productivity, Job performance, Efficiency and Effectiveness); and Perceived Ease of Use of e-procurement (Convenience, Learning Ease, Controlling, Flexibility, Understandable, and Easy to use).

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

Top-Level Executives' Support was operationalized by identifying indicators which were measured using the five-point rating scale questionnaire. The indicators for this variable were the extent of provisions of resources; Structural Arrangements, Communication level; Level of Expertise; and Use of Power.

Employees' ICT Competencies were operationalized by identifying indicators which were measured using the five-point rating scale questionnaire. The indicators for this variable were: Information browsing ability; Network Communication skills; Content Creation ability; Safety and Security Control ability; and Problem-Solving skills.

Suppliers' ICT Readiness was operationalized by identifying indicators which were measured using the five-point rating scale questionnaire. The indicators for this variable were: ICT Basic Infrastructure level; ICT hardware and software usage; and ICT Human Resource availability.

METHODOLOGY

The study was carried out using data obtained from a total sample of 450 respondents from the three groups of the study population, who are identified as the major stakeholders of the e-procurement system in the Eastern Provincial Council Organizations. (1) Top-Level Executive Officers, (2) Employees involved in procurement works, and (3) Registered suppliers in the Eastern Provincial Council organizations. The sample of respondents was selected on a stratified random sampling method, being the strata as the type of stakeholders from the various levels of 42 organizations which are under the purview of the Eastern Provincial Council.

The Eastern Provincial Council is a government institution of Sri Lanka. Five Provincial Ministries, the Governor's Secretariat, the Chief Secretary's Secretariat, and the Provincial Council Secretariat are the major institutions operating under a Provincial Council in Sri Lanka (ep.gov.lk). 17 Departments, 4 sub-national statutory bodies, and a regulatory body are operating under the Provincial ministries of the Eastern Provincial Council (ep.gov.lk). In addition to them, 10 institutions are operating under the Chief Secretary's secretariat and 2 institutions are under the purview of the Governor's Secretariat (ep.gov.lk). In total, 42 government institutions are functioning under the Eastern Provincial Council. These institutions have several District and Regional-level offices too (ep.gov.lk).

The samples were distributed among these institutions. According to the statistics from the Eastern Provincial Council as at end of 2023, the total number of Top Level Executives (Provincial Ministry Secretaries, Heads of Departments, Accountants, General Managers) was 237; the total number of Procurement Employees (Management Assistants, Development Officers, Technical Officers) was 1647; and the total number of registered suppliers (Telecommunication, Security, Sanitary, Electric and Electronic, Office equipment, Stationery etc. was 1392.

A sample of 150 Top level executives, 150 Procurement Employees, and 150 Suppliers was randomly selected from these three types of study populations to measure the independent variables specifically related to their characteristics with 150 observations in each variable. Four sets of self-administrated instruments for measuring the attitudes and perceptions of respondents were designed by the researchers in Google Forms and distributed by email among each of the 450 respondents identified in the sampling framework.

All instruments were designed with interactive statements to which five-point Likert-scaled responses ranging from strongly disagree to strongly agree were given. The first instrument was designed with 20 questions to measure the dependent variable, Stakeholders' Attitudes to the e-procurement System, as an average common measure from all three types of participants representing a unit of analysis. The second instrument was designed with 20 questions to measure the first independent variable, Top Level Executives' Support for the e-procurement System, as a specific measure from the sample of 150 top-level executives, each representing an organization.

The third instrument was designed with 25 questions to measure the second independent variable, Employees' ICT Competencies, as a specific measure from the sample of 150 Employees involved in procurement works, each representing an organization. The fourth instrument was designed with 30 questions to measure the third

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

independent variable, Suppliers' ICT Readiness, as a specific measure from the sample of 150 Registered suppliers, each representing an organization among the Eastern Provincial Council organizations.

Method of Data Analysis and Hypothesis Testing

The descriptive, correlation, and simple and multiple regression analyses were applied as techniques to analyze and evaluate the data collected from each of the three groups of sample, being the number of observations 150 for each variable, using the software PSPP version 4.0. The descriptive analysis was made to find out the frequency distribution, mean, standard deviation, minimum, maximum, skewness, and kurtosis for every variable.

Correlation and simple regression analyses were done between each independent variable and the dependent variable. The multiple regression analysis was done to evaluate the relative influence of each independent variable on the average of the stakeholders' attitudes towards the e-procurement system. The dependent variable was measured by averaging the total attitude measures of 450 respondents from the three distinct groups of stakeholders into 150 observations to be paired with the 150 observations of each independent variable, specifically from each of the three groups of participants. Hence, the fitted multiple regression model was set as:

$Y = \beta 0 + \beta 1\ (TES)\ it + \beta 2\ (EIC)\ it + \beta 3\ (SIR)\ it + \varepsilon.$ where, Y = Stakeholders' Attitudes towards adoption of e-Procurement System, β0 = Intercept of formula; β1, β2, and β3 = Slope coefficients; TES = Top Executives' Support; EIC=Employees' ICT Competencies; SIR=Suppliers' ICT Readiness; ε = Random Error Term; i = Respondent; t = Time period.

Hypothesis testing was done by forming the Null Hypothesis (H_0) and Alternate Hypothesis (H_A). Hypotheses were tested using the results of simple and multiple regression (linear) analyses choosing a probability level of significance (p-value) at 5% for measuring the error judgment. The decision Criteria for the Results of Regression were: If $P \geq 0.05$, then there is no significant impact of the independent variable on the dependent variable. If $P \leq 0.05$, then there is a significant impact of the independent variable on the dependent variable.

RESULTS AND DISCUSSION

The Cronbach's Alpha test was conducted to test the internal reliability of each research instrument. According to the results of this test, the four instruments used for measuring the dependent and independent variables were found to be more reliable as the value was above 0.9. A descriptive analysis was done on the data collected on the level of stakeholders' attitudes, top-level executives' support, employees' ICT competencies, and suppliers' ICT readiness. The results of the analysis, as presented in Table 1, indicated that the data recorded on all the variables are approximately normally distributed. The mean values of 3.77, 3.79, 3.69, and 3.62 were found for the average levels of variables respectively. The level of all variables was found to be above the average value (3.00) of the 5-point Likert scale among the sample of respondents, and the variations in all variables are insignificant, as indicated by the standard deviations and other statistics.

Table 1 Descriptive Statistics

Variables	N	Mean	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis
Stakeholders' Attitude	150	3.77	0.47	2.20	5.00	-0.94	1.96
Top Executives Support	150	3.79	0.44	2.25	4.90	-0.87	1.91
Employees' ICT Capacity	150	3.69	0.48	2.10	4.90	-0.89	1.48
Suppliers' ICT Readiness	150	3.62	0.40	2.33	4.68	-0.87	1.75

Source: Output of PSPP Analysis

Pearson's Correlation analysis as extracted in Table 2 indicated that the Top Level Executives' Support (TES),

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

Employees' ICT Competencies (EIC), and Suppliers' ICT Readiness (SIR) are positively and significantly correlated with the Stakeholders' Attitude towards e-procurement system (SAEP), with coefficients of 0.678, 0.675, and 0.641 respectively. All the assumed independent variables are strongly positively correlated with the dependent variable since the coefficients are more the 0.5 and significant at 0.05 level. It was also found that the independent variables have no multi-collinearity problem since the correlation coefficients are less than 0.7 among all the independent variables.

Table 2 Pearson Correlation between the Independent Variables and Dependent Variable

Variables	SAEP	TES	EIC	SIR
SAEP	1.000	-	-	-
TES	0.678*	1.000	-	-
EIC	0.675*	0.570*	1.000	-
SIR	0.641*	0.492*	0.554*	1.000

* Correlation is significant at the 0.05 level (2-tailed).

Source: Output of PSPP Analysis

The simple regression analysis was made to determine the functional or causal relationship between the following set of an Independent variable (IV) and the Dependent variable (DV) to find out the answers to research questions 1,2, and 3:

1. Top Level Executives' Support (TES) and Stakeholders' Attitude towards E-Procurement System (SAEP).
2. Employees' ICT Competencies (EIC) and Stakeholders' Attitude towards E-Procurement System (SAEP).
3. Suppliers' ICT Readiness (SIR) and Stakeholders' Attitude towards E-Procurement System (SAEP).

Linear regression analysis, as summarized in Table 3, revealed that the b value of the Top Level Executives' Support (TES), the gradient of the regression, is 0.93, which is significant at 95% (Sig.t = 0.000). As indicated by R Square, 74% of the variance of SAEP is explained by TES with a standardized beta of 0.86. The F value is 427, which is significant at 95% (Sig. F = 0.000), which suggests that the Top Level Executives' Support has significantly explained 74% of the variance of the Stakeholders' Attitude towards the E-Procurement system.

The b value of the Employees' ICT Competencies (EIC), the gradient of the regression, is 0.95, which is significant at 95% (Sig.t = 0.000). As indicated by R Square, 95% of the variance of SAEP is explained by EIC with a standardized beta of 0.97. The F value is 2725, which is significant at 95% (Sig. F = 0.000), which suggests that Employees' ICT Competencies have significantly explained 95% of the variance of the overall Stakeholders' Attitude towards the E-Procurement system. The b value of the Suppliers' ICT Readiness (SIR), the gradient of the regression, is 0.96, which is also significant at 95% (Sig.t = 0.000). As indicated by R Square, 66% of the variance of SAEP is explained by SIR with a standardized beta of 0.81. The F value is 291.7, which is significant at 95% (Sig. F = 0.000), which suggests that Suppliers' ICT Readiness has significantly explained 66% of the variance of the overall Stakeholders' Attitude towards E-Procurement system.

Table 3 Statistics of Simple Regression between each of the independent variables: Top Level Executive Support (TES), Employees' ICT Competencies (EIC), and Suppliers' ICT Readiness (SIR)with the Dependent Variable: Stakeholders' Attitude towards E-Procurement system (SAEP).

Regressing	TES with SAEP	EIC with SAEP	SIR with SAEP
Method	Linear	Linear	Linear
R	0.86	0.97	0.81

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

R Square	0.74	0.95	0.66
Adjusted R Square	0.74	0.95	0.66
Standard Error	0.24	0.11	0.27
Sum of Square	24.38	31.13	21.77
F	427	2725	291.7
Sig. F	0.000	0.000	0.000
T	20.67	52.21	17.08
Sig. T	0.000	0.000	0.000
b - Constant	0.26	0.26	0.29
b	0.93	0.95	0.96
Beta	0.86	0.97	0.81

Source: Output of PSPP Analysis

As a multivariate analysis, the Multiple Regression analysis was done in order to investigate the simultaneous impacts of all the independent variables on the dependent variable. The results of regressing the three independent variables (TES, EIC, and SIR) against the dependent variable (SAEP) are shown in Table 4.

The statistics of Linear multiple regression analysis as summarized in Table 4 revealed that the three independent variables - Top Level Executives' Support (TES), Employees' ICT Competencies (EIC), and Suppliers' ICT Readiness (SIR) - have conjointly significantly explained the variations in the overall Stakeholders' Attitude towards E-Procurement system, with the R^2 value of 0.64.

The square of the multiple R is 0.64, which indicates that 64% of the variations in the overall Stakeholders' Attitude towards the e-procurement system are explained by the three independent variables jointly. The F value is 86.08, which is significant at 95% (Sig.F=0.000), which suggests that the three independent variables have significantly explained 64% of the variations in the overall Stakeholders' Attitude towards the e-procurement system.

Table 4 Multiple Regression Model Summary

Method	R	R^2	Adjusted R^2	Standard Error of the Estimate	F	Sig. F
Linear	0.80	0.64	0.63	0.28	86.08	0.000

Source: Output of PSPP Analysis

The strengths of the influence that each of the independent variables had on the dependent variable (SAEP) were determined by the use of multi-regression coefficients of the independent variables.

The influence of each independent variable is shown in Table 5.

Table 5 Influence of the Independent Variables on Dependent Variable

Independent Variables	Unstandardized b coefficients	Standard Beta	Standard Error of Beta	t	Sig.t
Constant	-0.54	-	0.27	-2.01	0.004
TES	0.43	0.36	0.08	5.70	0.000

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

EIC	0.36	0.31	0.08	4.71	0.000
SIR	0.35	0.29	0.07	4.76	0.000

As shown in Table 5, Top Level Executives' Support (TES) had the strongest significant effect on the overall Stakeholders' Attitude towards the E-Procurement system, with a standardized beta of 0.36. Employees' ICT Competencies (EIC) also had a significant effect on the overall Stakeholders' Attitude towards the E-Procurement system, with a standardized beta of 0.31. Suppliers' ICT Readiness (SIR) too had a significant effect on the Stakeholders' Attitude towards the E-Procurement system, with a standardized beta of 0.29. According to the results of regression analysis, the Regression Equation for the factors influencing the Stakeholders' Attitude towards the E-Procurement system is finalized as:

SAEP = -0.54+0.43(TES)+0.36(EIC)+0.35(SIR).

Hypothesis Testing

A. Hypothesis 1

Hypothesis H_1 was: The Top-level Executives' Support has a significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations (b>0). The null hypothesis was formulated as H_0: The Top-level Executives' Support has no significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations (b<0). According to the results of linear multiple regression analysis, the coefficient of regression (b) for this variable is found at 0.43 which was significant at a 95% confidence level (P>0.05).

Therefore, according to the regression coefficient the null hypothesis is rejected and the alternative hypothesis is accepted since the b value is found significant. Hence, the data supported the hypothesis that Top-level Executives' Support has a significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations.

B. Hypothesis 2

Hypothesis H_2 was: The Employees' ICT Competencies have a significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations (b>0). The null hypothesis was formulated as H_0: The Employees' ICT Competencies have no significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations (b<0). According to the results of linear multiple regression analysis, the coefficient of regression (b) for this variable is found at 0.36 which was significant at a 95% confidence level (P>0.05).

Therefore, according to the regression coefficient the null hypothesis is rejected and the alternative hypothesis is accepted since the b value is found significant. Hence, the data supported the hypothesis that Employees' ICT Competencies have a significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations.

C. Hypothesis 3

The Suppliers' ICT Readiness has a significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations (b>0). The null hypothesis was formulated as H_0: The Suppliers' ICT Readiness has no significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations (b<0). According to the results of linear multiple regression analysis, the coefficient of regression (b) for this variable is found at 0.35 which was significant at a 95% confidence level (P>0.05).

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

Therefore, according to the regression coefficient the null hypothesis is rejected and the alternative hypothesis is accepted since the b value is found significant. Hence, the data supported the hypothesis that Suppliers' ICT Readiness has a significant positive impact on the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations.

CONCLUSIONS AND RECOMMENDATIONS

This study found that the average level of Top-level Executives' Support has been perceived by the respondents representing the companies at a higher level (mean = 3.77). Further, it was found that there is a significant positive relationship between Top-level Executives' Support and the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations. This correlation was found to be strong enough (0.678), as it is higher than the lower bound of a strong correlation criterion (0.5).

The multiple regression analysis revealed that Top-level Executives' Support had a significant effect on overall Stakeholders' attitudes towards the adoption of e-procurement system (the standardized Beta value of 0.36 at Sig.t = 0.000) and was found to be a significant predictor of Stakeholders' attitudes towards the adoption of e-procurement system. These findings empirically confirm the arguments given by [29], [38] - [53] that the Top-level Executives' support is a significant factor in promoting the adoption of e-procurement systems replacing traditional manual procurement procedures in public organizations.

This study found that the average level of Employees' ICT Competencies has been perceived by a sample of 150 employees engaged in procurement functions in the Eastern provincial council organizations at a higher level (mean = 3.69). Further, it was found that there is a significant positive relationship between Employees' ICT Competencies and the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations. This correlation was also found to be strong enough (0.675), as it is higher than the lower bound of a strong correlation criterion (0.5). The multiple regression analysis revealed that Employees' ICT Competencies had a significant effect on overall Stakeholders' attitudes towards the adoption of e-procurement system (the standardized Beta value of 0.31 at Sig.t = 0.000) and was found to be a significant predictor of Stakeholders' attitudes towards the adoption of e-procurement system.

These findings empirically confirm the arguments given by [53], [47], [63] - [62] that the Employees' ICT Competencies are a critical factor in inspiring the adoption of e-procurement systems replacing traditional manual procurement procedures in public organizations.This study also found that the average level of Suppliers' ICT Readiness has been perceived by a sample of 150 suppliers registered to supply goods and services to the Eastern Provincial Council organizations at a higher level (mean = 3.62).

Further, it was found that there is a significant positive relationship between Suppliers' ICT Readiness and the overall Stakeholders' attitudes towards the adoption of the e-procurement system in the Eastern Provincial Council Organizations. This correlation was also found to be strong enough (0.64), as it is higher than the lower bound of a strong correlation criterion (0.5).

The multiple regression analysis revealed that Suppliers' ICT Readiness had a significant effect on overall Stakeholders' attitudes towards the adoption of e-procurement system (the standardized Beta value of 0.29 at Sig.t = 0.000) and was found to be a significant predictor of Stakeholders' attitudes towards the adoption of e-procurement system.

These findings empirically confirm the arguments given by [7], [47]- [40] that the Suppliers' ICT Readiness is an essential factor in encouraging the adoption of e-procurement systems replacing traditional manual procurement procedures in public organizations.

It is concluded that three important factors embedded in ICT knowledge, skills, and attitudes of three types of major stakeholders (Executives, Employees, and Suppliers) measured independently are significantly influencing the construct of overall Stakeholders' attitudes, which is measured independently as a simple average of attitudes of those three kinds of stakeholders, towards the adoption of e-procurement system in the

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XI November 2024

Eastern Provincial Council Organizations.

This study therefore commonly recommends that Provincial Council Organizations gradually begin adopting e-procurement systems replacing traditional manual procurement procedures if they consolidate the support of top executives, ICT knowledge and competencies of procurement section employees and the Suppliers.

The findings of this study suggest that the top executives of provincial council organizations can take initiatives for designing and implementing the e-procurement system successfully with the support of major stakeholders since they have strong favourable and positive attitudes towards the adoption of the e-procurement system. The model used in this study has explained only 64% of the variations in the stakeholders' attitude, leaving remaining 36% un explained. Future researchers can add more factors to this model by considering the perception of the many more groups of stakeholders on the availability of infrastructure, government support, sustainability necessities, and so on. Hence, the expanded model can be tested for its enhanced validity in many empirical study settings in the future.

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