Effectiveness of Implementing E-Government Procurement in Sri Lanka

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Abstract

E-procurement is one of the most important sophisticated technologies employed by both the public and private sectors throughout the world. Many top-tier firms use this electronic platform in the procurement process to accomplish operations more efficiently and effectively by reducing corruption and other unusual expenses. At this moment Sri Lanka is facing for a severe financial crisis. The major causes of these problems include a reduction in Sri Lanka's dollar reserves, currency depreciation, and the impact of the covid-19 epidemic. Currently, the government spends a lot of money on the procurement process in the public sector. To recover from this situation, government may adopt an e-government procurement system into the public procurement process, which will help to save the billion rupees to the country by decreasing corruption and unnecessary expenses. Based on the past articles, we have identified there are several studies which have been conducted on E-government Procurement systems around the world. Procurement plays a vital role in a country as it is one of the major tools to build up a strong economy and gives value for money. With the development of technology, procurement has been adopted to an electronic platform that enables more effective and efficient processes for the government. By observing previous studies, researchers have determined some significant factors influencing the implementation of electronic government procurement. This paper has been conducted a systematic literature review based on findings of previous articles related to this study area.

Keywords

E-Procurement, E-GP implementation, Public sector, Technology, E-GP system.

1.Introduction

The procurement has been a foremost element of modern supply chains as a competitive strategy to build and maintaining positive relationships. It has been changing and developing over the years in many countries. Over the last few years, lots of new procurement business strategies have evolved, the majority of which involve private-sector businesses. Their main goal is to introduce new technology, such as e-business, to help with the procurement process of the indirect goods. Although these strategies have been widely spread around the world; in the Sri Lankan business context it is still in its infancy. In the state sector of Sri Lanka, the traditional procuring system remains the commonly used method of procurement systems. Government acts in the role of the largest procurement agency in a country to accomplish the requirements of citizens by affording goods and services. Procurement is one of the key instruments in Sri Lanka as well as a key factor in providing quality services to citizen (Premathilaka & Fernando, 2018). Rathnaseela (2018) states that public procurement is considered to be a major expenditure in Sri Lankan economy, costing around US$ 4.6 billion, or 24% of total government expenditures and 6.3% of GDP (Gross Domestic Product). However, it costs procurement transactions, high probability of corruptions and anti-competitive practices.

In this sense, improving the efficiency, cost-effectiveness, and competitiveness of Sri Lanka's governmental procurement are critical. Mohammed (2017) highlights that the implementation of E-GP (Electronic Government Procurement) is one of the best approaches that has been proposed. E – Procurement is considered as the combination

of advanced electronic technologies to expedite and empower an organizations' procurement activities. Many countries have experienced significant benefits through adopting e- procurement systems into their operations (Premathilaka & Fernando, 2018). Therefore, identifying the main issues, encounter in the manual process, to find the factors significantly influence to implement E-government procurement in Sri Lanka, to measure the relationship between E-GP implementation and technology, organizational and environmental factors and to identify the ways of solving the issues in manual system through the E-GP system are important to implement e government procurement in Sri Lanka.

However, the procurement system of the Government of Sri Lanka also suffered from imbalance of information, high cost in procurement transactions, high probability of corruptions and anti-competitive practices. As a solution for this, former government has introduced an E-Government procurement system for Sri Lanka (Jayasinghe, 2019).This system aims to improve the transparency and competitiveness within the government procurement function. According to views of former government, the new E-GP system will help to save almost 30 billion rupees for the Treasury by improving the financial management of the government sector. In late 2019, the government implemented the E-GP system called "Promise'' as applicable to all state institutions. However, as per our observation this system is currently adopted only in few state institutions and most of Sri Lankan government institutions still function a manual procurement process.

As the world is experiencing a major global pandemic, many state institutions and business entities are struggling to continue their normal routine. In this case an E-GP system is ideal as it enables the employees of state institutions to continue working remotely without risking their health and the business entities that are suppliers of the said institutions to continue their regular monetary pursuits without any disruption. Hence, this research aims to examine the factors behind the lack of interest shown by the public departments and statutory boards to adapt to the E-GP system as they still function a manual procurement process.

2. Methodology

Since the database is a compilation of published articles, all accessible articles were sourced using a systematic approach. When searching the articles, open access articles have been used which is not required any academic payment to download. Our review encompasses the years 2002 to 2020. The first step of this study was to gather information for the study. The articles were collected using three databases that cover a wide range of disciplines: Emerald, IEEE Explore, Scopus. To narrow down the scope of study, "E- Procurement" and "E – government Procurement" have been identified as main keywords. 734 articles were founded after the initial review. Article titles and abstracts were examined in order to determine overall appropriateness for inclusion. If necessary, the major texts of the articles were also thoroughly studied. Articles that defined the terms of E-Government procurement systems, electronic procurement and factors affecting for electronic government procurement implementation between the period of 2002 – 2020 were selected for this study. Articles that mentioned about green procurement, e – governance, corruption in procurement, procurement auctions which are irrelevant to this study and less quality articles were excluded. Out of 220 articles, 40 were preserved by this method. Figure 1 demonstrates the selection procedure of articles and all the articles considered in this study are explicitly listed in the paper's references section. Each article was thoroughly reviewed to cover the actual gap which has not been identified in prior studies related to this study area.

Data collection method and analysis techniques were discussed under the following section. researcher has identified two primary data collection methods based on previous studies: quantitative and qualitative method. Quantitative method (22) was the most commonly used data collection method which is summarized in table 1. Itemized scales and Likert's scale are the scales used to measure the variables and data has been collected as close ended question. On the other hand, a face-to-face, telephone, or online interview have been used to collect data for qualitative studies. Another significant methodological component for all research studies was data analysis tools Furthermore, there are several data analysis methods which have been identified when reviewing past studies on this subject area. Descriptive analysis was the most commonly data analysis method which has categorized in table 2. In the next section, researcher determines literature review on E-government procurement.

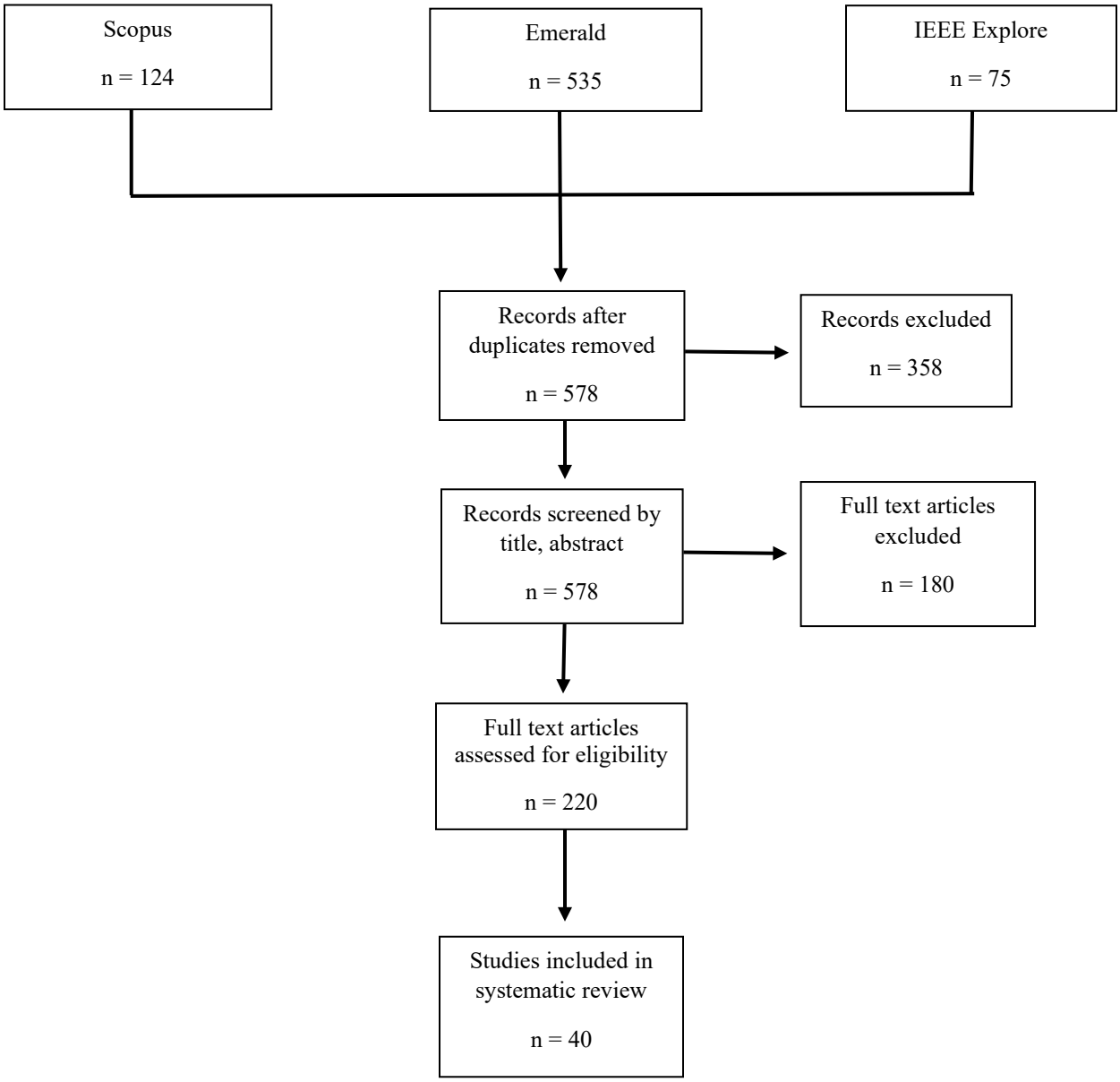

Figure 1. PRISMA Diagram

Table 1. Data Collection Methods

Data Collection Methods			
Research Method	Data collection methods	Frequency	Percentage %
Quantitative methods	Questionnaire and survey	22	55%
Qualitative methods	In depth interviews	12	30%
Mixed methods	questionnaires and personal interviews	6	15%
Total		**40**	**100%**

Table 1. Data Analysis Methods of Reviewed Articles

Data Analysis Methods	
Quantitative data analysis methods	Frequency
Descriptive statistics	24
Linear regression analysis	11
Correlation analysis	4
AHP analysis	1
Total	**40**

3. Main Results of Reviewed Studies

The following sections are briefly discussed the findings of all the articles which has been mentioned in the above diagram.

3.1 Conceptualization of Procurement vs E- Procurement

Procurement means the process of acquiring goods and services from another party by following certain rules and regulations. According to the procurement guidelines (2006) published by National Procurement Agency in Sri Lanka procurement is stated as "obtaining by Procuring Entities of Goods, Services or Works by the most appropriate means, with the public fund or funds from any other source whether local or foreign received by way of loans, grants, gifts, donations, contributions, and similar receipts. It would include purchase, rental, lease or hire purchase, including services incidental to the provision of the said Goods or Services or the execution of the Works". Procurement is mainly defined as a process of requisition of goods and services, purchasing, warehousing, and connecting suppliers and buyers to purchasing network (Shukla, et al., 2016).Wheele (2010) highlights that procurement as assessing external resources to ensure that the supply of all goods, works services, functionality and expertise required for the operation and maintenance of the company's primary and support operations is ensured in all conceivable ways.

Government Procurement means a collection of activities for the purpose of obtaining goods and services by government and government institutions which starts from the appraisal of needs and awarding the suppliers and make the final payment (OECD, 2019). Neupane et al. (2012) state that government procurement is the primary tool for managing public resources effectively which assists the all-government services including acquisition of stationary, furniture, high-cost building projects, aircraft carriers and other private financial projects. Public procurement process should follow the principles, guidelines, policies, and procedures to ensure the efficiency, transparency, integrity, competition, and uniformity public procurement system (Samarasinghe, 2009).

3.2 Understanding the Procurement Process

The consumer selects the goods through the traditional procurement system by manually browsing through catalogues, making phone calls, and sending copies to several suppliers. Then, customers compare prices as well as purchase and delivery terms and conditions. Typically, pricing and the ability to deliver on time are the two most important criteria that influence product selection. This procedure takes a while and is extremely tiresome. After selecting a product, the consumer completes a paper request form, which is then forwarded to the buyer in the organization's purchasing department. The department manager is usually the one who authorizes this. Next, the buyer would write up a purchase order and send it to the supplier. The supplier will provide an invoice and a delivery note with the item when it is delivered. This is frequently attached to verify the order form with the original. Payment can be processed when the order has been verified (Egbu, et al., 2003).

Currently there are main rules and regulations that are required to be followed in public procurement in Sri Lanka are procurement guidelines and manuals issued by National Procurement Agency (2006). Mainly these guidelines are categorized as follows.

• Procurement guidelines Goods and Services -published in 2006

• Procurement guidelines for selection and employment for consultants – published in 2007

• Guidelines for private sector infrastructure– published in 1998

• Procurement guidelines on pharmaceuticals and medical devices – published in 2006

Currently, all the procurement activities are governed by the ministry of finance and its procurement activities are decentralized (Mohammed, 2017).

Currently government procurement in Sri Lanka faces a range of challenges with the manual procurement process (Mohammed, 2017). Information asymmetries are the most significant problem in the traditional procurement process which means difficulty to access information related to procurement and tender opportunities. Since most of the government agencies distribute their tender notices through newspapers and scan websites, it imposes a higher cost on suppliers. Time-consuming and labor-intensive are the major disadvantages of manual administration of procurement. This manual process also has a significant impact on suppliers since it requires a high labor capacity for tender preparation. Mohammed (2017) states that anti-competitive practices are another challenge that has arisen in

the Sri Lanka procurement process. Anti-competitive activities have a major impact on increasing corruption in procurement by accepting unsolicited proposals for large and editing specifications according to the supplier. Apart from the above-mentioned weaknesses, delays in awarding contracts and the refusal to follow rules and regulations have a significant impact on the performance of procurement (Liyanage, 2005). Due to lack of knowledge and skills, lack of expertise, regular shift between suppliers, poor monitoring, non-availability of standard contract documents, awarding of contracts have been delayed.

High administrative and transaction costs is another major disadvantage of manual procurement which creates a high cost for both procurement entities and suppliers. Tender preparation, bid administration and bid evaluation are administratively costly for procurement entities. This happens due to lack of regular forms and extensive supplier databases in procurement process. Furthermore, there is a delay in administration because of limited information sharing with procurement organizations. Suppliers frequently face significant transaction costs while participating in public procurement. Usually, high human and material resources are needed for bid preparation specially for technically advanced bids (Mohammed, 2017).

E-procurement means the acquisition of goods and services by organizations using electronic systems for the purpose of conducting a smooth procurement process. Bandara (2020) states that electronic procurement as the digitalization of the entire public procurement process that directly impacts efficiency, effectiveness, and transparency (Gardenal, 2013). Davila et al. (2003) indicate that electronic procurement as the most important tool for large-scale organizations as it is designed using technology for the purpose of obtaining goods and services by government and other private institutions over the online platform. Vaidya et al. (2006) states that e-procurement means automation of each phase in the procurement process to improve the effectiveness, transparency, and efficiency in public procurement. Also, he states that it helps to utilize electronic tools for B2B purchases. Several types of e-procurement systems are as follows in table 3.

The major advantage of electronic procurement is that it increases the efficiency of each procurement process. Because it is a conversion of manual procurement process which is enabled for online system and generates “one to one” relationship among customer and supplier (Rejeb, et al., 2018). Electronic procurement process reduces the use of paper between buyer and supplier. Instead of coming and handover the necessary documents to office, suppliers can visit to the website and upload easily. Also, digitalization of procurement leads to the increase of competition among bidders because suppliers can view the tender process at any time. So, the human involvement in the bidding process has become decreased (Nurmandi & Kim, 2015).

Table 2. E-Procurement Systems

E – Procurement system	Description	Authors and year
E - Tendering	Process of receipt tender information, receipt of tender documents, submission of tender sum, final evaluation of tenders over the internet.	(Amarapathy, et al., 2013)
E - Payments	Process of making final payments to the procuring entities via electronic platform.	(Mohammed, 2017)
E- Ordering	Process of accepting purchasing orders, make the orders and order receipt through electronic system.	(Chepkwony & Chepkwony, 2017)
E- Sourcing	Use of internet-based systems in order to enable online negotiations with suppliers and procuring entities.	(Wiggans & Katok, 2006)
E- auctioning	Process of sharing information about bids and make visibility of the bid status with the quick response.	(CIPS,2013)
E- contract management	Process of conducting the relationship and legal terms and conditions between organizations over a system.	(Chieu, et al., 2007)

3.3 E- Procurement Process

The following diagram (Figure 2) demonstrates the six stages of electronic procurement function.

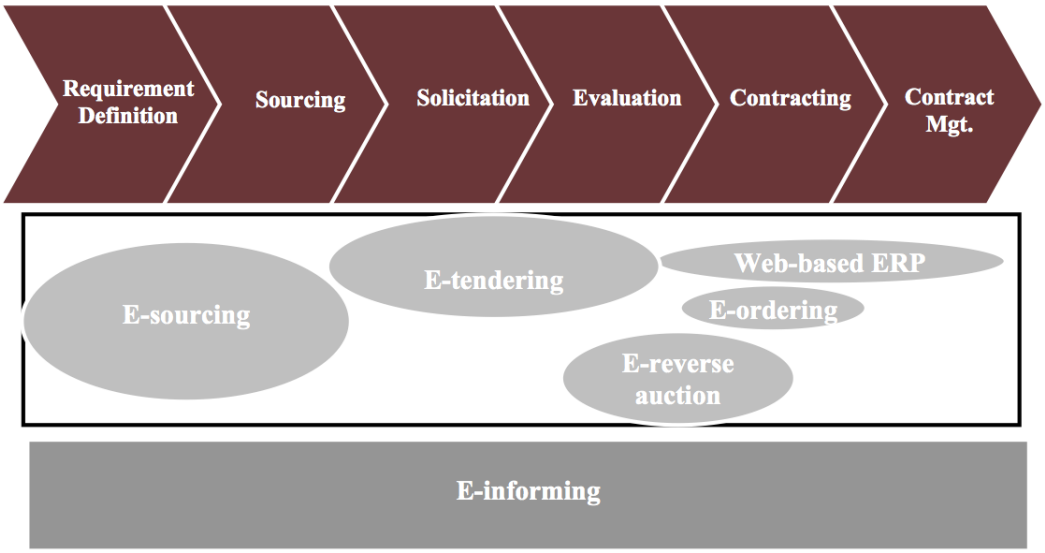

Figure 2. Electronic Procurement Process

Source – (CIPS, 2013)

Singh (2010) describes e- Tendering, e-Auctioning, and e-Ordering are main methods of electronic procurement.

1. E- Tendering

E tendering is a process of acquiring special goods and services electronically which is similar to the traditional procurement process. Figure 3 illustrates the steps in E-Tendering process.

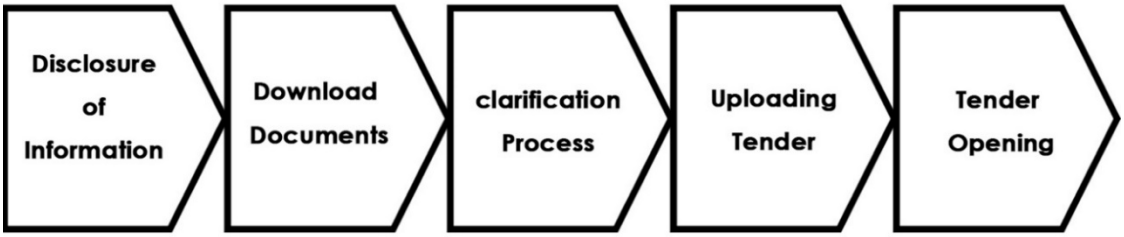

Figure 3. Steps in E- Tendering process

2. E- Auctioning

E-auction is a marketplace where both B2B and B2C customers can depart electronically. Suppliers sell goods or services via a website with a structured pricing method. Buying entity uploads items to the website with price and quantity which they want to purchase. Suppliers intend to sell the items for the best quoted price which is opened for

a predetermined time period. Both purchaser and supplier are to agree on the terms of transaction at the end of the auction.

3. E- Ordering (E-Catalogue)

E-ordering is a website which provides information on goods and services sold by the supplier. It also facilitates online payment and ordering. E- ordering is most appropriate for small procurements. Singh (2010) states that when an online portal is enabled e-ordering is more beneficial for government procurement.

There are certain advantages of adopting electronic system instead of conducting paper-based process. The major advantage of electronic procurement is that it increases the efficiency of each procurement process. Because it is a conversion of manual procurement process which is enabled for online system and generates "one to one" relationship among customer and supplier (Rejeb, et al., 2018). The reduction of the overall elapsed time employed to complete a tendering procedure (i.e. from publishing of the tender notice up to the contract awarding phase) is the main driver to measure efficiency. The overall elapsed time can be split, considering the duration of every specific phase of a tendering procedure to (Gardenal, 2013). Electronic procurement process reduces the use of paper between buyer and supplier. Instead of coming and handover the necessary documents to office, suppliers can visit the website and upload easily. Also, digitalization of procurement leads to increase the competition among bidders because suppliers can view the tender process at any time. So, the human involvement in the bidding process has become decreasing (Nurmandi & Kim, 2015).

By implementing E -GP, cost savings are increased for the administration because of reducing transaction costs and prices which have generated from effective and efficient work. As automation of procurement system reduces time wasted on repetitive tasks. Publishing contract awards results by online platform generates an effective tool for transparency of price while rejecting the overpriced contracts. when human decision-making power is decreased in the procurement process, the possibility of corruption practices will be reduced (World Bank, 2007). There are certain number of expenses which generate from manual procurement process such as advertisements for tender notices in newspapers, costs connected with printing documents, costs linked with evaluation committee and other. Also cost for materials and goods can be dramatically reduced by converting traditional process into electronic procurement. Each expense which connected in procurement procedure will be eliminated with the establishment over electronic government procurement (Addison, 2016).

When an organization conducts the procurement process via electronic platform, each employee gets access to follow every activity in the procurement process. Employees can check the status of tender phase, update results, information of suppliers and ability to receive up-to-date policies. E procurement acts as a role of standardization of files documentation and provide guidance for procurement process. Norms of transparency and disclosure are followed as a way of public accountability. Both examination and award process are conducting through online, it causes to enhance transparency of procurement process. Interested parties can easily access information relevant to tenders through e-procurement (Addison, 2016).

3.4 Factors Affecting E-Government Procurement Implementation

There is a wide range of past research which are illustrated on factors influencing most significantly for the implementation of e-government procurement. As per the past researchers, in this study, e-government procurement adoption factors are categorized into three main aspects including technological factors, organizational factors, and environmental factors.

3.4.1 Technological Factors

World Bank (2007) highlights that electronic government procurement provides information about five main technical aspects including standards and operability, authentication and security, technical integration and technical standards management, end-to-end integration, and variable technology design. According to this study, the management of this system integration is difficult, without having proper technical standards. UNICITRAL model laws for e-commerce and EU directives for government procurement are examples of standards in order to ease the integration. In addition to that authentication and security are significant aspects when implementing an e-government procurement system in order to ensure interoperability among e-government applications in the system (Panda, et al., 2014). The level of

integration necessary between the e-Procurement solution and current information systems must be determined. It is important to connect e- procurement system with financial management system in order to enable the facility of online payment to the suppliers (Vaidya, et al., 2006).

In the e-government procurement system security of data should be ensured and by use of the technology, procuring entities can authenticate the information of the user who places the order and suppliers get to know whether their order is safe or not to fulfill (Vaidya, et al., 2006). Mohammed (2017) describes those technological infrastructures are the most vital factor to utilize E GP system. As an example, one risk for implementing an e-government procurement system in the public sector is a lack of network infrastructure, which avoids transforming from manual procurement to electronic procurement. Prempeh et al. (2017) state that they have determined that technology means a combination of hardware and software applications. In order to create knowledge management systems, hardware applications are required because they are the basic platform for software and transfer of knowledge.

3.4.2 Organizational Factor

World Bank (2007) describes that the governments need skilled resources to implement the E- GP systems and it also stated that it can be done through training programs, support the staff, or partnering with a private sector to gain technological knowledge. User acceptance testing should be conducted before implementing the E- GP system because employees must be familiar with the new process of the system. Research implication shows that members of a particular organization should be able to practice e commerce skills because without the skills It would be hard to take an advantage of the new internet tools. Siahaan & Trimurni (2014) propose, the organizational factor which can be categorize as human capacity and ability, could influence the transparency of e procurement. Furthermore, it shows that for e-procurement to flourish, organizational culture must be of high quality, and the mentality of people who execute e-procurement must be trained to be highly capable, devoted, and have integrity in implementing e procurement. There is a trade-off between adapting e-procurement to specific organizational demands and attaining larger policy implications, as is typically the case with public sector projects (Roman, 2013).

According to the findings of previous articles, the organizational commitment and support are vital for e procurement. Li et al.(2015) state that top management support in the adoption of e-procurement systems, has displayed the importance of its role. B2B commerce has been the central factor of top management support. Prasetyo (2019) confirmed that the top management factor is a more important factor when implementing E- GP systems to the organizations and it gives more opportunities to obtain better outcomes in procurement for the business. Top management support is known as the certain foundation of effort and resource support given by the top management to the innovation (Daoud & Ibrahim, 2018). An outcome of a successful projects can be relied on the top management. The knowledge gap regarding IT tools, applications and procurement can be seen in the SME's, moreover, the people have less skill in IT, and some have less knowledge about procurement (Altayyar, 2017). Prasetyo (2019) recommends that the organizations should develop their educational level by facilitating relevant training programs for the purpose of stepping to the electronic platform. Premathilaka & Fernando (2018) illustrates that the organizations show interest to move into the new technology when their employees got more skills and knowledge on technology.

Prempeh & Asare (2017) propose, the results of the respondents showed that the education and training factor places a vital role in human resources when implementation to the e-procurement. Knowledge and skills required to utilize e procurement functionalities that rely on the use of generally accessible tools, on the other hand, are widely available; there is minimal difference among employees; knowledge in the sample had no discernible influence (Hassan, 2013). A number of governments' recognition over the need for skilled resources in E-GP implementation has been indicated by the review of this research (World Bank, 2007). The necessity of building a human capacity within the government institutions parallel or beforehand to the setting up of E-government procurement reform must be considered due to the general absence of proceeding professional development for procurement personnel. This can be achieved through the training programs to recognize, help, and captivate existing staff with appropriate skills and/or with the collaboration of the private sector seeking technological spillovers. Domínguez et al, (2011) highlight that citizen demand is a significant driver of e-government growth. The e-government systems are complex human–computer systems, users' willingness and abilities are important considerations; and organizations should educate and encourage users to develop relevant skills and commit to the adoption and sustainability of the e-government system.

3.3.4.3 Environmental Factor

For the improvement of the procurement process, it is necessary to provide opportunities for suppliers to offer their feedback to be monitored by the public procurement department. The reason behind such requirement is, some suppliers will be unwilling to conduct transactions electronically with the public sector as they may not be convinced about the benefits as they might view e-procurement as a means of forcing down their prices by the public sector. Therefore, suppliers must be made aware and educated about the benefits that can be obtained through a process of consultation as early as possible in the project. The degree to which the victory of an e-Procurement activity can be realized might be related to the level of e-readiness of suppliers, and suitable communication with suppliers is subsequently vital (Vaidya, et al., 2006). Due to global, automated processes incorporating best practices and eliminating unnecessary non-value adding activities; e-enabled relationships with suppliers, which speeds procurement cycle times and facilitates supplier performance improvements; and greater data accuracy, which minimizes ordering inaccuracies and provides the essential foundation for better management through measurement and analysis, electronic processing leads to significant time, cost savings, and efficiency. Tender documents are generated and published electronically, resulting in cost savings because no paper effort is necessary for tender preparation. As a result of this, it makes a better relationship between suppliers and procurement departments. (Hossain, 2016)**.**

3.5 E-Procurement Practices in Developing and Developed Countries

As a developed country, Singapore has conducted an empirical study that examined various factors influencing the adoption of e-government procurement in Singapore. Teo et al. (2008) states that with the development of using the internet in businesses, manual paper-based procurement is transferring to electronic procurement. Internet and web-based technologies support to enhance procurement operations while improving the procurement process. For instance, by using internet search engines, users can get information about products and services. Also, in order to track the orders, internet-based catalogs can be used. Internet-based bidding systems and online auctions enable the negotiation processes in the procurement and throughout the customized internet-based procurement software buyers can check the price, availability of desired products and make the payment via the internet. Also, the study states that the internet is the most significant factor in technology, which has impacted the adoption of e-government procurement.

As a developing country, Bangladesh has conducted research on analyzing challenges and implementation on adopting an e-government procurement system. Due to the lack of ICT infrastructure, they had to face many challenges when implementing an electronic procurement system. According to the researchers 'results, only 9.3 lac lines are distributing around the country from the population of 15.74 million. According to the population of the country, 0.58% of people are using telephone lines, 0.3% people are having fixed-wired subscriptions, and 2.2% people have mobile internet subscriptions (Liton & Hubib, 2015).

Arunga & Paul (2017) conducted research on implementing e-government procurement in Kenya. Accordingly, they have observed data from respondents as to the extent technology infrastructure has impacted adopting e-government procurement in Kenya. Results showed that 34% of respondents have highly agreed with to a very great extent, 28% respondents agreed with to great extent, 22% respondents said that it was a moderate factor and 8% respondents agreed with very little extent. Technology factor has comprised into hardware system installation, software installation, and network installations. As per the results, 82.2% of respondents have agreed with the question that hardware system installation played a major role in quality development. 88.8% of respondents said that software systems played a major in quality improvement. Also, 100% of the respondents highly agreed with network installations as they played

a great role in quality improvement. So as per the results, we can see technology has played a significant role when implementing e-government procurement in Kenya, and from that network application is an essential factor in adopting e-procurement.

The study conducted in North Sumatera Indonesia (Siahaan & Trimurni, 2014) also revealed that, ICT infrastructure is a vital factor in implementing e-procurement in Indonesia. Infrastructure includes a server, human resources who handle administration related to the e-procurement process such as provider registration, announcing procurement packages, and other bidding requirements, a communication network, and electronic software. In addition to the availability of hardware such as a firewall and proxy server has designed a confidential password system as a public security safeguard. However, owing to a lack of public awareness, particularly among potential suppliers, of the e-

procurement system, as well as unprofessional staff attitudes, the executors of e-procurement have engendered skepticism and distrust.

Gunasekarana & Ngai (2007) has conducted empirical research on adoption of e-procurement in Hong Kong. As human capacity and awareness is an effective factor to the e-procurement adoption according to this the senior management of the organization must understand the benefits of e-procurement. Many managers are failed to recognize the intangible and strategic benefits of implementing e-procurement. Many people of the organization decide against e-procurement adoption because they are only considering about financial and short-term benefits. However, if they fail to move with the new competition and new technologies, they can't survive in the modern business world. Appropriate workshops and seminars should be conduct for the management to get a thorough knowledge about the advantages and disadvantages of adopting e-procurement. At any case, senior management should call up frequent meetings and focus group meetings to inform about the sudden technology changes.

As a massive developing country, India has conducted research on e-procurement implementation, critical analysis of success factors' impact on project outcome. Panda & Sahu (2012) describe that E-Procurement system represents a technological revolution, and it is critical that stakeholders in the manual procurement system are properly supported in adopting the technology. The training provided will have a large impact on the seamless transition to the new system and its acceptance by stakeholders. A well-thought-out and supportive atmosphere must be built for all problems encountered by system users to be resolved in a timely and user-friendly way.

According to the thoughts of (Kaliannan, et al., 2010) Overall, the data show that suppliers have a favorable attitude about the implementation of an e-Procurement system. Most suppliers felt that using technology in their interactions with the government will benefit both sides. Suppliers feel that the e-Procurement system would improve the efficiency of procurement transactions between the government and the suppliers from the time they apply for a tender until they get payment from the government after providing products and services. Furthermore, the suppliers gave encouraging signals regarding the influence on the e-Procurement performance metric. They think that using e-Procurement can minimize the time required for communications between the parties involved while also enhancing delivery dependability and product quality.

From the Sri Lankan context, Bandara (2020) states factors influencing the adoption of e-government procurement for XYZ public sector educational institute. He defines technology as the most crucial factor which has influenced adopting e-government procurement for the public sector in Sri Lanka. The results showed that the technological factor comprising software, hardware, networking, and interoperability capacity of existing IT infrastructure. Furthermore, he has evaluated how much technology impacts e-government procurement implementation in the selected case study. According to the findings, the software application has been indicated as the most significant factor for e-government procurement implementation. Moreover, hardware applications and network applications are the next vital factors that have a significant effect on e-procurement adoption. The interoperability capacity of existing IT infrastructure also has a moderate influence on the implementation of e-procurement. As per the responses, assurance for digital security will not certainly impact the adoption of e-procurement applications. Consequently, the researcher has indicated the technology plays a vital role in the implementation of e-government procurement in Sri Lanka. Hence, the combination of software, hardware, and network applications add more value to the government sector procurement in Sri Lanka.

3.6 E-Government Procurement Adoption

According to the Promise E-GP guidelines (2020) adoption of the E-GP system will be increased the competitiveness between suppliers. In addition to that adopting this E-procurement system to the government sector will make the procurement system more transparent, with less chance for bribery, and less chance for bureaucratic discrimination. If this E-government procurement is successfully implemented to the government institutions, it will help to reduce corruption and it will pave the path to considerable savings for the Sri Lankan government.

(Padhi & Mohapatra , 2010) indicated that implementation of E-government procurement initiates an effective, efficient, transparent, and equitable procurement environment. Adopting E-government procurement will facilitate the procurement process by reducing paper works, reducing the duration of procurement, and low cost for transactions. Therefore e-procurement implementation supports expanding both internal and external communication and business deals in the government sector. Moreover, adopting e-procurement to the government will help to grant more bid

participants and create huge competition between the bidders that will help to decrease the incompleteness in the procurement process.

The following table 4 illustrates the summary of reviewed articles.

Table 3. Summary of Reviewed Articles

Concepts and Variables	Past Research Studies
Conceptualization of Procurement vs E- Procurement	National Procurement Agency (2006), (Shukla, et al., 2016), Wheele (2010), (OECD, 2019), Neupane et al. (2012), (Samarasinghe, 2009).
Understanding the Procurement Process	(Egbu, et al., 2003), National Procurement Agency (2006), (Mohammed, 2017), (Liyanage, 2005), Bandara (2020), Davila et al. (2003), Vaidya et al. (2006), (Rejeb, et al., 2018), (Nurmandi & Kim, 2015).
E – Procurement systems	(Amarapathy, et al., 2013), (Mohammed, 2017), (Chepkwony & Chepkwony, 2017), (Wiggans & Katok, 2006), (CIPS,2013), (Chieu, et al., 2007).
E- Procurement Process	Singh (2010), (CIPS, 2013), (Rejeb, et al., 2018), (Gardenal, 2013), (Nurmandi & Kim, 2015), (World Bank, 2007), (Addison, 2016).
Technological Factors	World Bank (2007), (Panda, et al., 2014), (Vaidya, et al., 2006), Mohammed (2017), Prempeh et al. (2017).
Organizational Factor	World Bank (2007), Altayyar (2017), Tsuma and Kanda (2017), Teo et al. (2009), Garrido et al. (2008), Siahaan and Trimurni (2014), (Roman,2013), Li et al. (2015), Prasetyo (2019), (Daoud and Ibrahim, 2018), (Panda, et al.,2014), (Altayyar, 2017), Prasetyo (2019), Premathilaka and Fernando (2018), Prempeh and Asare (2017), Kang (2018), Hawkins and Muir (2014), (Steinfeld, et al.,2015), (Egbu, et al.,2003).
Environmental Factor	(Vaidya, et al., 2006), (Hossain, 2016)
E-Procurement Practices in Developing and Developed Countries.	(Teo, et al.,2009), (Liton and Hubib, 2015), Arunga and Paul (2017), Siahaan and Trimurni (2014), (Prasetyo, 2019), Gunasekarana and Ngai (2007), Panda and Sahu (2012), Kaliannan et al. (2010), Bandara (2020).
E-Government Procurement Adoption	Ministry of Finance (2020), Padhi and Mohapatra (2010).

4.Discussion

According to the research on E-government procurement that has been analyzed, there are several advances and advantages. Most nations throughout the world, including Kenya, Zimbabwe, Pakistan, Bangladesh, Indonesia, India, South Korea, France, and others, employ these e-government procurement systems to handle their procurement operations in the recent decade. These methods have been implemented after considering several elements such as technology, the environment, people, and organizational support. When considering these elements, new technologies in a professional manner have been accepted and developed, and it relates to the employees as well, as the nations mentioned above, provided sufficient training and information to the staff when they transitioned into the E-GP systems. Furthermore, the research found that many governments have provided adequate education to suppliers and stakeholders about E-GP systems in order for them to conduct successful procurement procedures.

The majority of literature assessments have shown several advantages of using E-GP systems. The benefits include reduced expenditures, reduced corruption, more openness in the procurement process, and the saving of time and millions of dollars. As a developing country, Sri Lanka continues to use the traditional procurement process. This usual procurement method takes much too long and costs far too much money. However, by using the E-GP system, Sri Lanka will be able to resolve several issues with government procurement. Sri Lankan government is having various obstacles in implementing the E-GP system. These problems include a lack of understanding in modern technology, the traditional attitude of the procurement parties, a lack of network infrastructure, and insufficient telecommunication connections. By reducing above mentioned challenges Sri Lankan government can implement this E-GP system to the procurement process successfully.

5.Conclusion

There is no doubt that implementing e government procurement system would be more beneficial to the entire procurement system in Sri Lanka. Government acts as the largest procurement agency in a country in order to accomplish the requirements of citizens by offering goods and services. Procurement is one of the key instruments in Sri Lanka as well as a key factor in providing quality services to citizens. With the evaluation of technology, both government and private organizations tend to increase competencies and resources accurately to maximize productivity. Therefore, information communication technology enables new business opportunities around the world while increasing the competitiveness among business firms. E-procurement is one of the main advanced technologies which is used by both public and private sectors in the world. There are many top leading organizations utilize this electronic platform in procurement process with the purpose of performing their operations efficiently and effectively.

Sri Lanka's public procurement suffers from four main weaknesses including information asymmetries, high transaction costs and anti-competitive practices and high corruption. As a solution for above mentioned weaknesses, this study has been focused on the ways of solving that has been encountered in manual procurement process via E-GP system. implementation of e – government procurement in Sri Lanka. Many countries have experienced significant benefits through adopting e- procurement systems into their operations including cost savings, efficiency, reduce corruption, increased competition, and growth and increase transparency. Based on the past reviewed studies, there have been identified three main factors for implementing E-GP system such as technological factors, organizational factors, and environmental factors and there was a significant impact of technological and organizational variable with the implementation of E-GP system. Furthermore, there was a negative relationship with supplier readiness and E-GP implementation. Since there was a negative relationship with suppliers, managers should give them opportunities to provide their suggestions and comments for further improvement of E-GP implementation.

There is a high prerequisite of conducting research on this area because there is less studies have been done in Sri Lanka. It is planned to undertake empirical research on effectiveness of implementing e-government procurement in Sri Lanka and the findings of this study will be beneficial for the government of Sri Lanka and all the procurement entities in Sri Lanka.

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Biography

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