DOI: http://doi.org/10.4038/ijabf.v7i0.107

International Journal of Accounting & Business Finance Vol.7 (Special Issue)
pp. 31 - 42

AWARENESS AND ADOPTION OF CLOUD ACCOUNTING IN SMALL AND MEDIUM ENTERPRISES IN SRI LANKA: A COMPARATIVE ANALYSIS OF BEFORE AND AFTER COVID-19 PANDEMIC

Elayanathan, P and Kalainathan, K

Vavuniya Campus of the University of Jaffna, Sri Lanka

Abstract

Accounting generally plays a vital role in businesses. Accountants are required to handle gigantic data for achieving their task. In case data must be gathered from internally and externally. On this COVID-19 outbreak time, Organization's strategic and tactical management employees started to work from home while operational employees worked onsite. So, organizations are willing to be aware and adopt a new platform to interconnect all of them. Organizations pursuing a model, where employees easily collect access and alter the data, making decisions, communicating and controlling the overall process through a single platform. The development of the cloud concept is a remarkable solution for this information management system. The concept of cloud accounting, an innovative model for accountants to collect and store accounting data, run accounting reports and share information effectively. This study's main objective is to explore the level of awareness, adoption, and experience of using cloud accounting among the small and medium enterprises (SMEs) in Sri Lanka before and after the COVID-19 pandemic. All SMEs listed under Sri Lanka Chamber of Small and Medium Industries selected as the sample. This study used questionnaires to compare the awareness level of this emerging technology, to what extent they utilize this technology and the user experience of the technology before and after this pandemic. The analysis suggests that there is a significant mean difference of awareness and adoption of cloud accounting before and after COVID-19 pandemic. Prior to the pandemic, 35% of the SMEs started to use cloud accounting. However, their experience of using cloud accounting remains unchanged in both periods. Moreover, 8% of the SMEs are newly adopting this technology in this pandemic time. So, this study urges digitalization in the field of accounting support to the business in this outbreak time. Overall study recommends SMEs be able to enhance the performance through cloud accounting.

Keywords: Awareness, Adoption, Cloud Accounting, COVID-19 Pandemic.

1. Introduction

The eruption of COVID-19, firstly revealed in late 2019, still now more than 113 million people infected globally and caused more than 2.5 million deaths. Global spread of this virus led to the World Health Organization to characterize it as a pandemic on 11th of March, 2020 (WHO, 2020). This COVID-19 pandemic has driven fundamental functional changes in all countries. Since the beginning of 2020, the operation of healthcare systems, economic and financial systems, tourism, and citizens' lifestyle became challenged along with the global lockdown. As a result, the global business cycle collapsed; especially production, sales and distribution of goods and service and supply chain processes declined nationally and internationally. The globally well-established business having preplanned strategies, financial stabilities and contingency mechanisms to overcome this outbreak. However, small and medium sized enterprises (SMEs) have been impacted profoundly by this pandemic.

Worldwide different principles used to recognize SMEs. Among them, the number of employees, value of the investment, nature of the business and the sector classification are some recognized principles to define SMEs in Sri Lanka. Small and Medium Industries or Enterprises, Micro Enterprises, Rural Enterprises, and Small-Scale Industry are commonly used names for SMEs. It has been recognized as an essential sector in developing countries to reduce the burning problems such as poverty and unemployment. Compared with corporations, these SMEs have less investments, employees, operations, and have less energy to face crisis (Priyanath & Premarathne, 2014).

In this modern era, technology has tremendously advanced with globalization, which creates an enduring impact on the business environment. Development of the internet, free trade zones and political freedom have brought industrialists to start the business anywhere and entrepreneurs to initiate small business ideas with complex networks. Cloud accounting is a recent concept in the field of accounting, based on cloud computing to satisfy the needs of business professionals, entrepreneurs and accountants (Christauskas & Miseviciene, 2012).

1.1 *Research problem*

In this digitalized era, SMEs are gradually recognized as the preeminent factor for economic developments. It is a significant source of creating employment, revenue generation, innovation, technological advancement and poverty reduction. In Sri Lanka, SMEs have the great backbone to economic growth after the civil war. Location of the island, international access, availability of natural resources, weather condition, ocean resources, and historical and tourism spots are the main reinforcements for entrepreneurs in Sri Lanka. The imposition of COVID-19 lockdown immediately carried a negative impact on SMEs (Gunawardana, 2020). For the survival of entrepreneurs and employees, SMEs started to find some alternative ways to run the business. As a result, SMEs started to function via online and bring goods and services to customers' door steps with safety measures.

Later, SMEs gradually move to operate physically in a safe manner to avoid the spreading of the virus. Bringing all customers, employees, and professionals to the physical working environment has become

challenging after this pandemic. This conveys SMEs to find a new solution. They plan to invite non-managerial and day-to-day operational employees to the physical environment, and all others are requested to work from home or routinely attend to the working environment. Since accounting is the essential part in all commercial business, accountants have to perform on-site and off-site simultaneously; therefore, SMEs need to find a new model to manage their accounting process effectively (Priyanath & Premarathne, 2014). Organizations are willing to adopt a new accounting platform where the operational employees automatically collect and update the data in a system from the operational environment while the accountant creates the report of that data from home, meanwhile internal auditors effortlessly check the physical balances with actual balances, at last the owners able control all the performance through remote systems.

Before COVID-19, the continuous amendments in global accounting standards, practices and framework influence accountants' task challenging. However, the application of technological advancements supports to handling vast amounts of data. Therefore, the accounting departments are generally influenced by digitization. In this way, the creation of cloud computing generated new accounting models. The demand for cloud accounting is profoundly raised with the COVID-19 pandemic and supply of various models raised through continuous technological developments; both are intersecting in this global pandemic period. Additionally, technological advancements increase the demand for accounting profession outsourcing. With the growth of outsourcing, cloud accounting developed vastly (Gambal, Asatiani, & Kotlarsky, 2020). To improve SMEs' overall performance, researchers analyze cloud accounting awareness and its adoption between SMEs and its benefits and barriers before and immediately after the COVID-19 pandemic in Sri Lanka.

1.1. *Objectives of the study*

- To explore the level of awareness of cloud-based accounting among the SMEs in Sri Lanka before and after the COVID-19 outbreak.
- To explore the level of adoption of cloud-based accounting among the SMEs in Sri Lanka prior and subsequent to COVID-19 outbreaks.
- To examine the benefits and barriers of using cloud-based accounting among the SMEs in Sri Lanka prior and subsequent to COVID-19 outbreaks.

1.2. *Research Hypothesis*

Based on the main objectives, these are the main hypotheses of this analysis.

- **$H_0$1:** There are no mean differences in awareness of cloud accounting in Sri Lankan SMEs before and after the COVID-19 pandemic.
- **$H_0$2:** There are no mean differences in the adoption of cloud accounting in Sri Lankan SMEs before and after the COVID-19 pandemic.
- **H03:** There are no variations in the user experiences of cloud based accounting among SMEs in Sri Lanka prior and subsequent to the COVID-19 pandemic.

1.3. *Significance of the study*

This study provides a comparative overview

of Sri Lankan SMEs awareness and adoption of cloud accounting before and after the COVID-19 pandemic. The paper aims to bring together the several benefits and issues regarding cloud accounting implications, that could enable the readers and business professionals to understand the importance of cloud accounting in a business context and show a comparative view of before and after the pandemic. Furthermore, the study will explore the possible shortcomings and potential changes of digital accounting in the forthcoming future.

1.4. *Limitation of the Study*

Research limited the sample of SMEs, which were listed under Sri Lanka Chamber of Small and Medium Industries in Sri Lanka and analysis limited to immediately after the first wave of COVID-19 pandemic.

2. Literature Review

The accounting system's core objective is denoted by collecting, entering and getting reports of data, controlling events based on the reported information, such as economic impact upon the organization, management and processing, and disclosure of information towards internal and external users (Ionescu, Ionescu, & Tudoran, 2013). Before the advent of fast and low-cost digitized technology, accounting was traditionally handled manually and all transactions recorded in books and kept in voluminous paper binders. Once computers became widespread and software was affordable, accounting tasks moved into the new model, where accounting concepts remained the same but mechanism changed from papers to a computer (Shanker, 2019). This progression of technology transfers the manual accounting system to computerized systems and bulk of paper with historical data and hand written financial statements have been decoded in computers. Later, business automation systems enter day to day transactions into the system to create financial reports. Most of the popular accounting software was developed for specific industries, companies and for specific activities. This permits companies to create individual reports rapidly and effectively for management decision-making and controlling the activities (Ghasemi, Vahid, Mohammad, & Elham, 2011).

According to Zhang (2014), SMEs are not quickly shifting to the digital world because of cost and maintenance. After the 2000s, accounting software was used by SMEs for bookkeeping and office automation. Lately the program developers developed customized accounting software as per the nature and need of the users. Cloud accounting is a modern concept in accounting which is comparatively beneficial than customized software. As a digitalized accounting model, cloud accounting provides beyond the need of accountants. Innovation of cloud accounting significantly improves the firm’s overall performance (Egiy & Udeh, 2020).

According to Banker and Johnston (1993), the traditional financial and management accounting systems are created to obtain internal and external costs and market information to support strategic planning, decision making, and controlling. According to Otilia and Marian (2015), the traditional manual method and accounting software for financial and management accounting is sometimes complex and too expensive, especially for a small or starting business. They also require storage capacity, Internet

bandwidth, and a specialized IT skill staff to organize, continuous updates and maintenance.

Today's cloud accounting model implies ease of access, customized and collaborative through cloud computing. The drawback of accounting software led to the creation of cloud accounting as a software, as an accounting platform and as an accounting server. This online accounting involves the same functionalities as an accounting software installed on the client's computer but runs on the servers. It provides maximum accounting information services to all interested parties (Egiy & Udeh, 2020).

Christauskas and Miseviciene (2012) suggest that traditional accounting methods proved that they are inefficient and inadequate for modern-day accounting requirements. Furthermore, Shah, Malik, and Malik (2011) observe that traditional and software based accounting systems are inadequate in satisfying modern day accounting necessities. Furthermore, users worry about the security system and legal compliances of accounting practices in all accounting systems. Results of the study suggests 73% of the cloud accounting users rank security as a significant concern over adopting cloud services, while 38% worry about regulatory compliance and loss control. Managers of Nigerian companies appreciate cloud computing benefits and address their compliance and security problems, thereby, SMEs requesting government policies to store data in the cloud and limit the access in cloud to reduce the negative gaps (Egiy & Udeh, 2020).

According to Zhang (2014) large enterprises have a relatively high understanding of cloud accounting services while few could use them. Since professionals realized that accounting information is the root for business success and survival, developed countries started to adopt this technology widely; while the developing countries government does not make a clear cloud accounting policy. The literature found that no actual research work related to cloud based accounting was done in Sri Lanka and particularly compared before and after COVID-19 pandemic. This research gap motivated the researcher to work on the set of objectives.

3. Research Methodology

This study is carried out among the SMEs in Sri Lanka. This study obtained data from SMEs listed under the Sri Lanka Chamber of Small and Medium Industries. Qualitative data relating to awareness, adoption and user experience of cloud accounting collected through self-administered and tested questionnaires. Analysis such as paired T-Test, frequency table, box plot, and bar chart done to compare the responses prior and subsequent to the COVID-19 pandemic. The questions were divided into three parts. Respondent's organizational and managerial profiles questions were asked in Part I, and Part II contains the awareness questions. Finally, part III includes Likert scale to measure the user experience of cloud accounting tested through benefits and barriers scales. The questionnaires were sent to the entire population. Response received from 37 SMEs including Manufacturing (5 firms), Trading (7 firms), Footwear and Textiles (3 firms), Beverages and Food (6 firms), Construction and Engineering (3 firms), Chemical and Pharmaceutical (7

firms), Power and Energy (4 firms) and Packaging (2 firms). This study developed google form questionnaires to find out the responses. Besides SPSS software and Microsoft Excel were used to analyze the results.

4. Findings

4.1. *Awareness and adoption of Cloud Accounting.*

Figure 1 explains the overall awareness and adoption of cloud accounting in SriLankan SMEs. The data collection summary indicates that 54% of the SMEs were aware of the cloud accounting phenomenon before the COVID-19 outbreak, whereas, consequent to the pandemic, there is a 5.5% increase in awareness of cloud accounting among SMEs in Sri Lanka. However, the level of adoption is comparatively lower than the awareness level, and figure 1, the bar chart shows, before the pandemic 35% of SMEs adopted cloud accounting which was increased by 8% after the COVID-19 outbreak.

Responses of the questionnaire shows most of the SMEs adopted cloud as a Quick Book software. However, the internationally collaborated firms use cloud as a server for easy accessibility and outsourcing. These findings suggest entrepreneurs already have a good idea about this cloud technology. According to the results, lack of awareness of cloud accounting in SMEs was considered as a critical reason for non-adoption of cloud accounting. A prior study found 40.1% of accounting professionals aware of this accounting model in Sri Lanka (Kariyawasam, 2019).

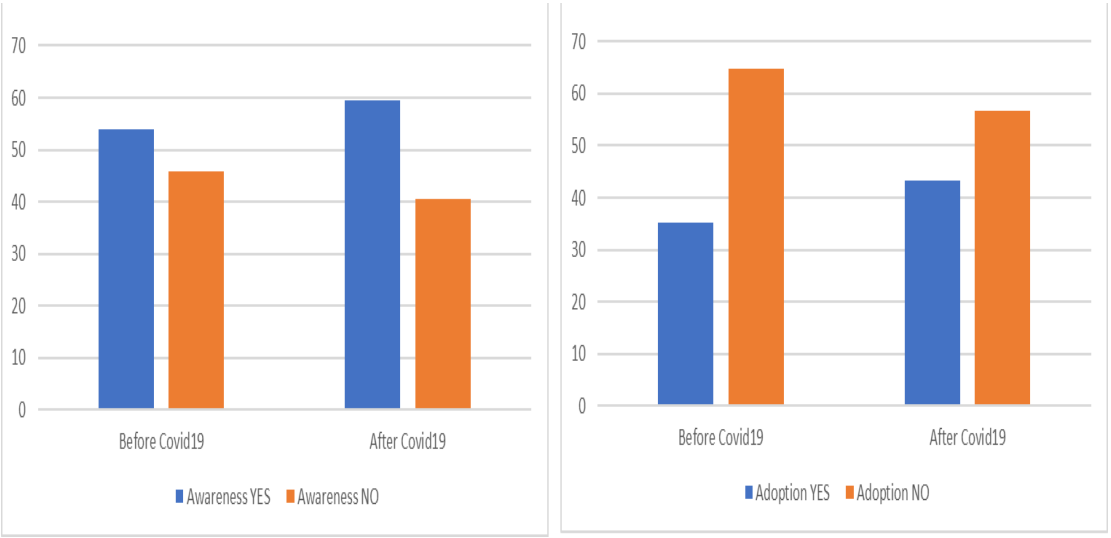

Figure 1. Awareness and adoption of cloud accounting in SMEs, Sri Lanka

Figure 2, box plot graph clearly shows there is a mean difference in between the both periods. COVID-19 lockdown is the critical element for these significant mean differences. Hence, SMEs try to find this alternative cloud based model to uninterrupted accounting process and information management. According to Bataev (2018), cloud accounting reduces the costs of doing business in crisis conditions, as a result adoption of cloud servers increased in the Russian economy.

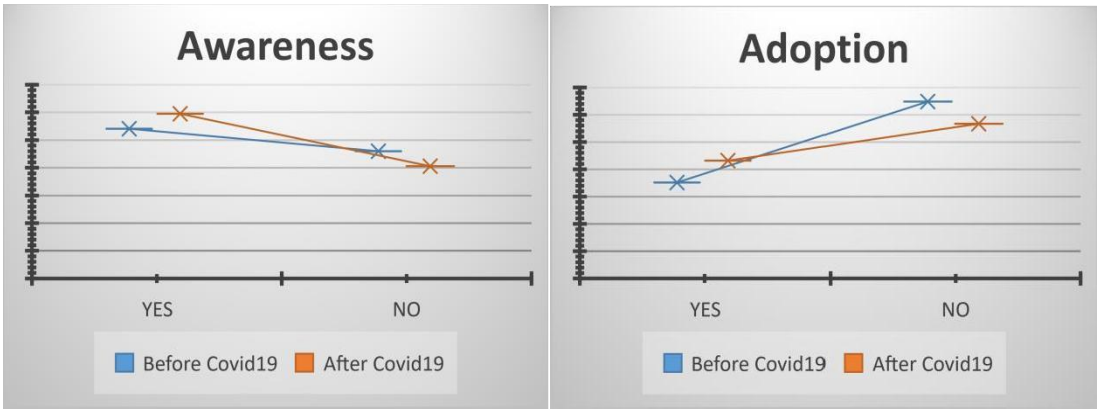

Figure 2. Box plot graph of significance of awareness and adoption before and after COVID-19

Table 1 represents the result of awareness and adoption level across different SMEs in Sri Lanka. SMEs are categorized based on sector, location province, age and international collaboration to analyse in different views. Based on the frequency table, awareness significantly increases after COVID-19 pandemic. The SMEs sector wise result shows manufacturing, footwear and textiles, power and energy, beverages and food, chemical and pharmaceutical has shown an identifiable increase in awareness after COVID-19. Soon after the lockdown, beverages and food, footwear and textiles and chemical and pharmaceutical sectors have higher awareness level of cloud accounting; which indicates these sectors quickly identified alternative technologies to satisfy the essential market needs than the other sectors. Simultaneously, adoption of cloud accounting increased in footwear and textiles, power and energy, chemical and pharmaceutical sectors after the pandemic. Whereas package and trading sector SMEs are not aware about the cloud concept.

In this pandemic time, customers are increasingly buying medicines; therefore, they adopt new technology to work smoothly to satisfy their customers' needs. Whereas the essentiality of food, beverages, textile and footwear SMEs started their business through the internet, therefore they quickly adapt cloud technology (Qashou & Saleh, 2018)

SMEs functioning in Central, Southern, and Western provinces are greatly aware of cloud accounting prior and after COVID-19. Meanwhile, SMEs from Eastern province has no idea about cloud accounting. SMEs which are located close to the capital city are advanced in technology. Even though Central, Southern province SMEs significantly adopted this model afterward of the COVID-19 pandemic.

SMEs, which were started more than 50 years ago and recently registered, are aware about cloud accounting before the pandemic; consequent to the pandemic this rate was increased; however, their adoption level remained the same before and after of the pandemic. The result indicates new and well established entrepreneurs have good technological background. 30 to 50 years old SMEs' awareness remains constant whereas their adoption level slightly increased after the pandemic.

Mostly, internationally collaborating SMEs' level of awareness is higher than the other SMEs before this outbreak, and it remains unchanged after the pandemic. SMEs who do not collaborate internationally improve their awareness from 10% to 37% and adoption from 38% to 65% during this outbreak time.

Table 1. Comparison of the awareness and adoption of cloud accounting based on organizational profile of SME

Characters	Segments	Before COVID-19		After COVID-19	
		Awareness	Adoption	Awareness	Adoption
Sector of the Organization	Manufacturing	50%	25%	66.66%	25%
	Footwear and Textiles	0%	0%	100%	66%
	Construction and Engineering	100%	20%	100%	20%
	Power and Energy	20%	0%	23%	20%
	Trading	0%	0%	0%	0%
	Beverages and Food	55%	30%	75%	45%
	Chemical and Pharmaceutical	16%	0%	66%	20%
	Packing	0%	0%	0%	0%
Organization main location Province	Central Province	20%	20%	32%	25%
	Eastern Province	0%	0%	0%	0%
	Southern Province	33%	0%	33%	20%
	Western Province	65%	60%	72%	60%
	Other Province	-	-	-	-
Age of the organization	>30	42%	20%	50%	20%
	30-40	20%	10%	20%	15%
	41-50	26%	30%	26%	40%
	50<	50%	25%	68%	25%
International collaboration	Yes	90%	30%	90%	30%
	No	10%	38%	37%	65%

Source: primary data

4.2. *Paired Samples Test*

Table 2 shows a significant level of adoption and awareness before and after the COVID-19 pandemic. It indicates the significant level of awareness is 0.036, and the adoption is 0.045 before and after the COVID-19 outbreak. Both levels are less than 5%. Its indicates null hypotheses 1 and 2 are rejected

Table 2. Paired sample T-Test for awareness and adoption of cloud accounting

Paired Samples Test		Paired Differences			t	df	Sig. (2-tailed)
		Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
Pair 1	Awareness before COVID 19 – awareness after COVID-19	-.140368	-.270837	-.009899	-2.260	18	.036
Pair 2	Adoption before COVID-19 – adoption after COVID-19	-.07947	-.15678	-.00216	-2.160	18	.045

Source: SPSS

4.3. *Findings: level of Pros and Cons of using Cloud Accounting prior and subsequent of Pandemic*

Figure 3 explains the experience of using cloud accounting by existing and newly adopted users. Based on the collected responses, most of the users agree with the benefits of cloud accounting such as cost saving, automation of work, access from anywhere, facilitating the generation of accounting reports, easy to control every activity, easy decision making, and communicating them to all relevant people. Simultaneously, neutral scale points are given to the speed of access with data before and after the pandemic. Meanwhile, SMEs disagree with on-time updates to all users, reduce communication difficulties, reliable information, and more excellent storage capabilities. It will take time to experience all the positive futures of cloud accounting in Sri Lanka as a developing country. These findings consistent with the findings of Otilia and Marian (2015), which specify lowered costs, increased productivity and reduced the risks are the major benefits of cloud accounting.

However, SMEs strongly agree with some barriers of cloud accounting, such as requiring employees with required skills and IT knowledge, additional training to perform, and high initial costs and the access by multi-user might create errors. While Likert scale shows SMEs strongly disagree with the barriers such as the chance of losing data and not so popular in the nation. It shows cloud accounting does not satisfy all the requirements of SMEs.

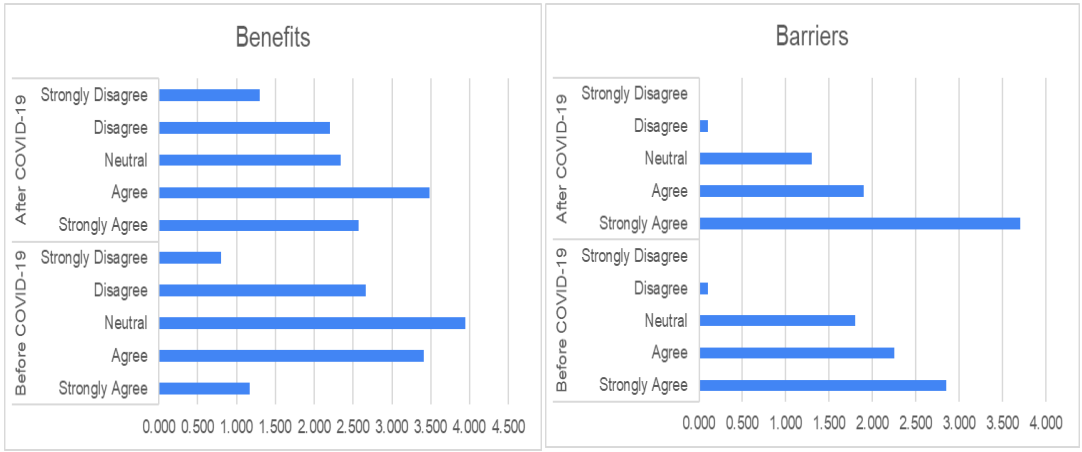

Figure 3. Benefits and barriers of cloud accounting before and after COVID-19 Pandemic

4.4. *Paired Samples Test*

Table 3 shows a significant level of user experience of cloud accounting before and after the COVID-19 pandemic. Its significant level of benefits is 0.392, whereas barriers in cloud accounting are 0.141, both are higher than 5%. It says the null hypothesis three is accepted. It indicates cloud users' experiences remain unchanged prior and subsequent to this pandemic.

Table 3. Compare the user experience with pros and cons of Cloud Accounting

Paired Samples Test		Paired Differences			t	df	Sig. (2-tailed)
		Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
Pair 1	Benefits Before and After COVID-19	.805833	-1.183414	2.795081	.892	11	.392
Pair 2	Barriers Before and After COVID-19	-.192857	-.470861	.085147	-1.697	6	.141

Source: SPSS

5. Conclusion and Recommendation

This study aims to measure the level of awareness and adoption of cloud accounting among SMEs in Sri Lanka. Analysis shows, SMEs' adoption level is lower than their awareness level of cloud accounting. Based on the increased level of awareness in cloud accounting, it is confirmed that SMEs significantly shifted to cloud accounting as an advanced technology for shaping business processes after the COVID-19 pandemic. The study also examines the user experience of this technology prior and subsequent to COVID-19 1st wave. Compared with

previous experience, study proved no mean differences in their usage experience soon after this pandemic time.

Study's findings achieved the objectives and provide interesting insights. This study is in comparative nature, more studies are required to investigate further adoption level, reasons, and special features adoption in cloud accounting. This study only focuses on SMEs, a larger-scale study with respondents from various backgrounds and various industries may also contribute to this new technology's theoretical and practical achievements. The outcomes of this comparison recommend to Sri Lankan SMEs that they have the ability to enhance their business performance through the adoption of cloud accounting systems which will impact the accounting and finance area of their business. Also advancement in technology shifts traditional and software base accounting paradigm to embracing cloud-based accounting platforms in crisis time.

The digital developments in the field of accounting support the business in this outbreak time. Presently SriLankan government started to move cloud accounting specially RAMIS tax payment system. So, this adoption will improve the performances of taxation, auditing and budgeting in pandemic time. SMEs can improve economic scale and reduce administrative expenses. It also recommends SMEs, who are depending on outsourcing for the accounting process.

Bibliography

Banker , R., & Johnston, H. (1993). An Empirical-Study of Cost Drivers in the United-States Airline Industry. *Accounting Review, 6*, 576-601.

Bataev, A. (2018). Comparative Analysis of Cloud Computing Application in Russian and Foreign Financial Institutions. *International Conference "Quality Management, Transport and Information Security, Information Technologies" (IT&QM&IS)*, (pp. 578-582).

Christauskas, C., & Miseviciene, R. (2012). Cloud -Computing Based Accounting for Small to Medium Sized Busines. *Economics of engineering decisions, 23*(1), 14-21. doi:https://doi.org/10.5755/j01.ee.23.1.122

Egiy, A. M., & Udeh, N. S. (2020). Rerview of Cloud Accounting in Nigeria. *International Journal of Academic Management Science Research (IJAMSR), 4*(6), 80-88.

Gambal, M., Asatiani, A., & Kotlarsky, J. (2020). Innovation through IT Outsourcing – Evidence from. *Twenty-Fourth Pacific Asia Conference on Information Systems, Dubai, UAE, 2020*, (pp. 1-12).

Ghasemi, M., Vahid S, Mohammad A, & Elham B. (2011). The impact of Information Technology (IT) on modern accounting. *Procedia - Social and Behavioral Sciences, 28*, 112-116. doi:10.1016/j.sbspro.2011.11.023

Gunawardana, D. (2020). *The Impact of COVID19 on the MSME Sector in Sri Lanka.* Sri Lanka UN DESA/DSDG. Retrieved from https://sustainabledevelopment.un.org/content/documents/26277Report_The_Impact_of_COVID19_to_MSME_sector_in_Sri_Lanka.pdf

Ionescu, B. S., Ionescu, I., & Tudoran, L.

(2013). The economic impact of cloud computing technology on new business and employment in Romania. *Manager Journal, 17*(1), 293-301.

Kariyawasam, A. (2019). Analysing the impact of cloud-based accounting on business performance of SMEs. *The Business and Management Review, 10*(4), 34-41.

Otilia , D., & Marian , M. (2015). Cloud Accounting: A New Business Model in a Challenging Context. *Procedia Economics and Finance, 32*, 665-671.

Priyanath, H. M., & Premarathne, S. P. (2014). Government SME Development Programs in Sri Lanka: A Review in the Lens of Transaction Cost Economics. *Sabaragamuwa University Journal, 13*(2), 59-70. Retrieved from http://repo.lib.sab.ac.lk:8080/xmlui/handle/123456789/692

Qashou, A., & Saleh, Y. (2018). E-marketing implementation in small and medium-sized restaurants in Palestine. *Arab Economic and Business Journal, 13*(2), 93-110.

Shah, H., Malik, A., & Malik, S. (2011). Strategic management accounting – a messiah for management accounting. *Australian Journal of Business and Management Research, 1*(4), 1-7.

Shanker, S. (2019). *chron.com*. Retrieved from chron.com: https://smallbusiness.chron.com/difference-between-traditional-accounting-computerized-accounting-4021.html

WHO. (2020). *WHO Coronavirus (COVID-19) Dashboard*. Retrieved from World Health Organization: https://covid19.who.int/?gclid=CjwKCAjwvMqDBhB8EiwA2iSmPHF53z8_WrrsNRp89v_F_Ikz-qmmzHxlFZPyTP8HnY1zEsLu1npWGxoC240QAvD_BwE

Zhang, C. (2014). Challenges and Strategies of Promoting Cloud Accounting. *Management & Engineering, 17*, 79-82.