

Factors Influencing The Application Of Cloud Accounting In Public Sector

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Abstract

Conventionally, the everyday tasks performed by accountants are stored in the server or individual machines. Nevertheless, this method of storing information is not virtually and economically viable IT solution for the future due to the information stored is not centralized and cannot be accessed from anywhere or anytime. Hence, the development of cloud accounting brings a new evolution in the public sector accounting profession where the software and information can be assessed from anywhere through the internet-based cloud application. This study intends to investigate the factors influencing the cloud accounting application in public sector from the perspectives of people, process, and technological risk. Cloud accounting revolutionizes the process of storing and processing of data on a shared platform, allowing flexible access to data and collaborative decision making by the accountants. As such, application of cloud technology plays a vital role in the storing of information, work process of an accountant and the analysis conducted by the accounting profession. This study has been conducted by reviewing several recent journals related to cloud accounting application to obtain in-depth understanding and examination on the factors in the application of cloud accounting. The expected output from this review is to be able to increase understanding on the application of cloud accounting among civil servants in public sector. This study will be able to portray the benefits and opportunity in public sector accounting on the application of cloud accounting and it can better comprehend the related parties including the industry players, policymakers, government agencies and researchers in the field.

Keywords: Cloud Accounting; Public Sector; People; Process; Technology

1.0 Introduction

Currently in the world cloud computing is certainly seemed to be the next big thing to be applied a crossed globally as there are a series of shift in the computing series (C.Wyld, 2010). In addition, with the technology advancement of cloud computing around the world, it is still appeared to have uncertainties regarding the speed and ultimate optimisation on the cloud computing (C.Wyld, 2010). Below shows the shift from the internet to cloud computing from the year 1980 to year 2020 (C.Wyld, 2010).

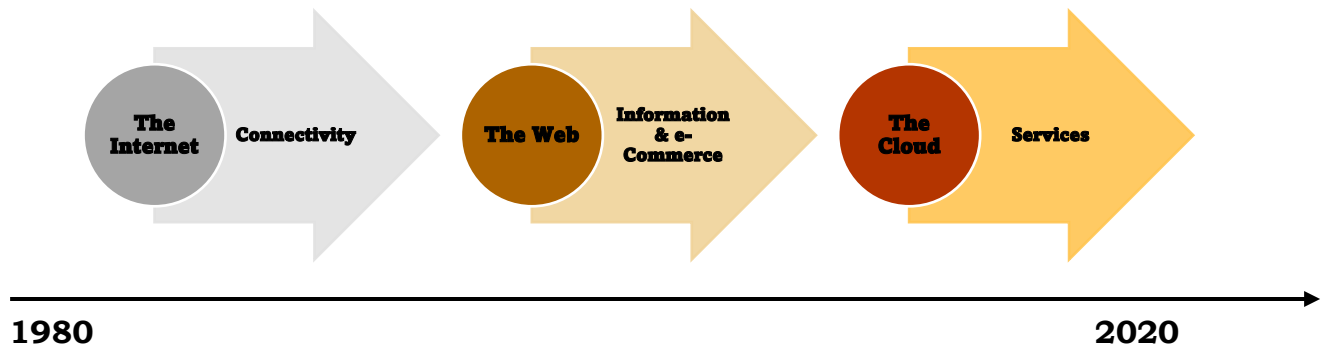


Figure 1: From the Internet to Cloud Computing (C.Wyld, 2010)

Cloud computing's advancement leads to a new evolution of the accounting information system, cloud accounting. Cloud computing encompasses a whole range of services as shown in figure 1 and thus anything can be done using the cloud computing (C.Wyld, 2010). Certainly the cloud computing technology has enable a new platform and an independent perspective on how we communicate and collaborate information globally (C.Wyld, 2010). In cloud computing, the phrase 'cloud' refers to a collection of networks, much to real clouds, which are collections of water molecules (Prince, 2011). A new approach of providing accounting services to clients was offered by cloud accounting.

In the context of this study, cloud accounting is defined as a service using cloud accounting software that is accessible to users from anywhere and does not require any hardware and accounting equipment (C.Wyld, 2010). This study aims to understand the contribution factors and benefits in the implementation of cloud accounting in the public sector. In addition, this study is based on previous research and there will be no methodology of data collection used throughout the research.

Three factors influencing the cloud accounting application in public sector are people, process, and technological risk as can be seen in Figure 4 (Prodan, Prodan, & Purcarea, 2015). As a term, people, process, and technology (PPT) framework refers to the methodology in which the balance of people, process, and technology drives action. People perform a specific type of work for an organization using processes and technology to streamline and improve these processes.

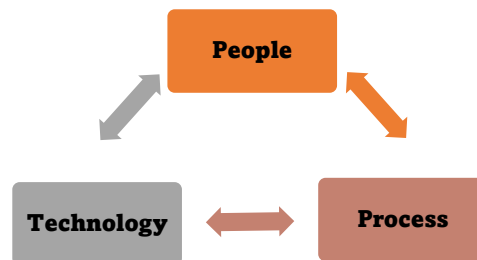


Figure 2: PPT Framework (Prodan, Prodan, & Purcarea, 2015)

This framework can help organization achieve harmony and is most often used when deciding to implement new technologies. Apart from these factors, there are also several benefits in the application of cloud accounting such as mobility, cost savings and improved safety. The factors influencing the application of cloud accounting and its benefits will be discussed in more depth in this conceptual study.

The National Institute of Standards and Technology (NIST) defines "cloud computing" as a model that enables universal, convenient, on-demand network access to a shared pool of reconfigurable computing resources (such as networks, servers, storage, applications, and services) that can be quickly provisioned and released with little management effort or service Provider interaction (Mell & Grance, 2023).

Cloud computing is a set of active networks which providing scalability, quality of service, low-cost computing infrastructure and accessible in a simple and omnipresent manner (Aman & Mohamed, 2017). As such, it has made the accounting data to be easily access and it can on demand mode which the accountant can quickly view and use the accounting information. The impact on the accounting field is, there will be less limitation on accessing the accounting data and as such more time can be spent on analysing all the accounting information. The cloud computing model has enabled the data to be on demand as such the accountant can complete their work from any location remotely.

Cloud accounting uses the cloud technology where all the accounting information are in difference location with all the accounting information users. In addition, the accounting services that use cloud technology has led to changes in the existing accounting service where it encourages more on the use of cloud technology, hence this had led to the changes in the current accounting service provided by the service provider (Aman & Mohamed, 2017).

Firstly, cloud accounting technology will be able to change the method of storing financial accounting information where the information can be stored in a more efficient manner. The data is stored in the cloud which makes the accountant to be on the cloud as well. Secondly, cloud accounting applications are also expected to have an impact on the work process of an accountant where cloud accounting can transform the way the accountant conducts their task. x. Thirdly, from the aspect of the analysis, cloud accounting application technology is equipped with real time monitoring where the head of finance department can have an in-depth visibility on the status of financial of the organization. As such, the government should increase the level of application of cloud accounting in the public sector. Cloud service providers oversee cloud architecture and protect data.

1.1 Factors Influencing the Application of Cloud Accounting in Public Sector

People, process and Technology (PPT) has been widely recognized as the main three elements which leads to the improvement process for an application implementation (Prodan, Prodan, & Purcarea, 2015) .Hence, this is main approach that contribute towards the improvement for the overall organization and thus the efforts need to be focused on this main three area towards a successful implementation of an application within the organization. In this section, we propose to discuss mainly the PPT dimension as these are the main factors that influence the application of Cloud Accounting in the public sector.

i. People

People in this framework refer to workers performing jobs (through processes) in the organization. Successful change requires people with the right attitude, experience, and qualifications. Also, buy-in from the people is crucial. Since people will mainly get affected by changes, ensuring information flows among right people will ensure people understand changes to be implemented and the impact post implementation.

Based on the studies of (Salam & Ali, 2020) in their study use the conceptual model called Unified Theory of Acceptance and Use of Technology (UTAUT) framework to study behavior intention or characteristics of people (Salam & Ali, 2020). Four factors are identified by UTAUT as direct determinants of behavioral usage or intention to use. As highlighted by (Salam & Ali, 2020), all those factors are Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions. These four factors can affect how widely cloud computing is adopted around the world.

In addition, the IT personnel play a major role in the adoption of cloud accounting in the public section as the innovation is conducted by the IT personnel in the aspect to transform knowledge for getting the new technology in place within the public sector (Sallehudin, Ismail, & Razak, 2015). The findings of the study made by (Salam & Ali, 2020) showed that adoption of cloud computing was directly driven by behavioral intentions. Performance expectancy and Effort expectancy both had an impact on user behavior and are significant determinants of cloud accounting implementation by government employees. Performance expectancy is the extent to which a user believes that using the system will enable them to improve their job performance. Effort expectancy involves the users' skills to run the system (Salam & Ali, 2020).

ii. Process

A process is defined as a series of actions or steps that is performed to achieve a targeted objective. In PPT framework, the structure and task elements of the Leavitt's Diamond change model were combined to represent processes performed in the organization (Sallehudin, et al., 2020). Processes are necessary to standardize work and to ensure people perform their function effectively. Therefore, in promoting changes, people need to know how they

fit into the workflow once changes are implemented. In other words, how changes will affect people's job process and which processes could be eliminated with implementation of change i.e. technology (Prodan, Prodan, & Purcarea, 2015).

A successful cloud computing implementation requires organizational readiness and full commitment by higher management to conduct the daily business process using cloud computing. The top management's influence drives change in the decision-making process. The outcome could be favorable or unfavorable for the adoption. The top management's wise choice will result in complete support for the adoption process and successful use of cloud computing. The agency's readiness would consider all these factors; sufficient financial resources, competent people resources (IT staff) for support and troubleshooting, and suitable technical infrastructure (Sallehudin, et al., 2020).

The process complexity of the adoption of cloud accounting may hinder the application of cloud accounting within the public sector. Complexity within the cloud accounting innovation which is considered to be relatively difficult to be understand and use by the employee in the public sector (Sallehudin, Ismail, & Razak, 2015).. To guarantee the public sector in Malaysia successfully adopts cloud computing, the agency should ensure the business process could be carried out effectively by ensuring sufficient computer networking with faster internet speed.

iii. Technology

Technology progressions have brought a modern measurement to the designs of computerisation. Already, each association competed within the data communication and innovation (ICT) foundation with an assortment of instruments, gadgets, equipment, computer program, and more. In any case, in today's quickly changing innovation, with the move to the mechanical transformation 4.0 (IR 4.0) environment, it has opened a modern measurement to the world of computing. The development of cloud computing innovation as an unused stage for computing has opened the eyes of innovation industry players to advance advantage from this development.

Based on Hassan, Nasir, Khairudin, & Adon (2017), technological context has perceived many benefits through the innovation in terms of easing the data analysis, reduction of deployment of time, IT employee cost and mobility. The cloud computing technology may improve the communication of business information which can create a better inter-organization coordination and customer service. Numerous thinks about have demonstrated that this innovation gives numerous benefits to the industry and clients such as its capacity to decrease working costs, progress collaboration, more secure security levels, and more versatile openness (Amron, Ibrahim, & Chuprat, 2017).

Technology has many impacts on jobs. In line with the advancement of technologies such as artificial intelligence, machine learning and robotics, the nature of certain work performed by individuals are experiencing transformation. Technology implementation could facilitate automation, substitute routine middle skills jobs, and complements innovative and high-skill jobs. Technological change theories have been applied in various fields including economics, law, risk governance, cyber security, among all.

There are three main factors that influence the application of cloud accounting within the public sector organization. Based on the in depth understanding for the three factors of people, process, and technology, it can be concluded that all the factors play the major role in the application of public sectors. Each factors play’s its own major role in the application within the public sector accounting.

Table 1: GAP Analysis

Construct	Corresponding Item	Item Sources
Technology	<p>Malaysian government agencies that regard cloud computing as beneficial are more likely to use cloud computing and so improve service delivery.</p> <p>Numerous thinks about have demonstrated that this innovation gives numerous benefits to the industry and clients such as its capacity to decrease working costs, progress collaboration, more secure security levels, and more versatile openness</p>	<p>(Hussin, Salleh, Suhaimi, & Ali, 2019)</p> <p>(Amron, Ibrahim, Chuprat, & Bakar, 2019)</p> <p>(Mokwena & Hlebela, 2018)</p>
People	<p>While implementing an IT innovation, the technical capabilities, talents, and/or expertise of IT personnel will have an impact on the agency. Performance expectancy and Effort expectancy both had an impact on user behavior and are significant determinants of cloud accounting implementation by government employees.</p>	<p>(Rajapathirana & Hui, 2018)</p> <p>(Salam & Ali, 2020)</p>

Process	Cloud computing offers a superior answer for business processes. As advantages for business, cloud computing provides elasticity, simplicity, shared-services, improved service delivery, and cooperation as a competitive advantage that increases achievement for the sustainability of e-government services.	(Sallehudin, et al., 2020)
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The three main factors that influencing the application of cloud computing has been discussed thoroughly above. There are many issues that is still remain to be worked out from the people, process and technology point of view in order towards a success of cloud accounting application in the public sector (C.Wyld, 2010).As for the people factor, there are resistance towards the changes of technology and process. The three factors are interrelated to one another which affect the application of the cloud accounting in public sector. The main issues arise is from the people-based and not the tech based (C.Wyld, 2010). Some people view the application of cloud accounting as a threat on their job as many jobs scope is automated and fear of losing their job. In the real the world application, cloud accounting can ease the job of the IT professional as well as the accountant as can be freed from the day-to-day hassle of maintaining the software and bookkeeping (C.Wyld, 2010).

As from the perspectives of process, there would be changes in the flow of day-to-day job performed and this is certainly a transition from the mainframe to the web-based application (C.Wyld, 2010). Thus, in the emergence of cloud accounting, the organization or the relevant department shall provide a training towards the employee on the process change to avoid high turnover of the employee. As such, the organization might be losing on the human capital and it was said by (C.Wyld, 2010), training the human is the most difficult aspect in the upgrading process. The organization shall have a proper migration strategy in order to retain the human capital within the organization and able to change the work process within the people.

As from the perspectives of the technology, in the globalisation era there are a major shift in the technology advancement so that business can be conducted globally. In order to encourage the economic development, national and regional governments may require cloud providers to manage the operations in government data centres or to even locate the data centres within their jurisdictions (C.Wyld, 2010). The promotion of the technology growth together with the properly trained human capital will enable the migration of the technology from first to the third world in the coming era where internet and security concern is there (C.Wyld, 2010).

As a public sector agency, the consideration of the move towards the cloud environments may perceived many benefits, experiencing potential benefits, increasing collaboration capabilities and operational advantages with the security, reliability and privacy concern (C.Wyld, 2010). Hence, cloud accounting can be represented as a revolutionary change in the computing power will be used and procured in the era and this technology will have an impact in the developing world and nations.

As an example, the cloud computing in Asia country such as Japan uses “Kasumigaseki Cloud” where the national government as invested efforts in undertaking a major shift in the shift toward the cloud computing. The main reason the major shift is to sustain globally and to allow a greater information and resource sharing in order to promote a more standardization and consolation in th government it resources (C.Wyld, 2010). Figure 5 shows the example of consolidation of the governmental IT under a single infrastructure in the Japan government which is believe to contribute towards the benefits of costs reduced, operational benefits and more on the green technology which is more environmentally friendly IT operations (C.Wyld, 2010).

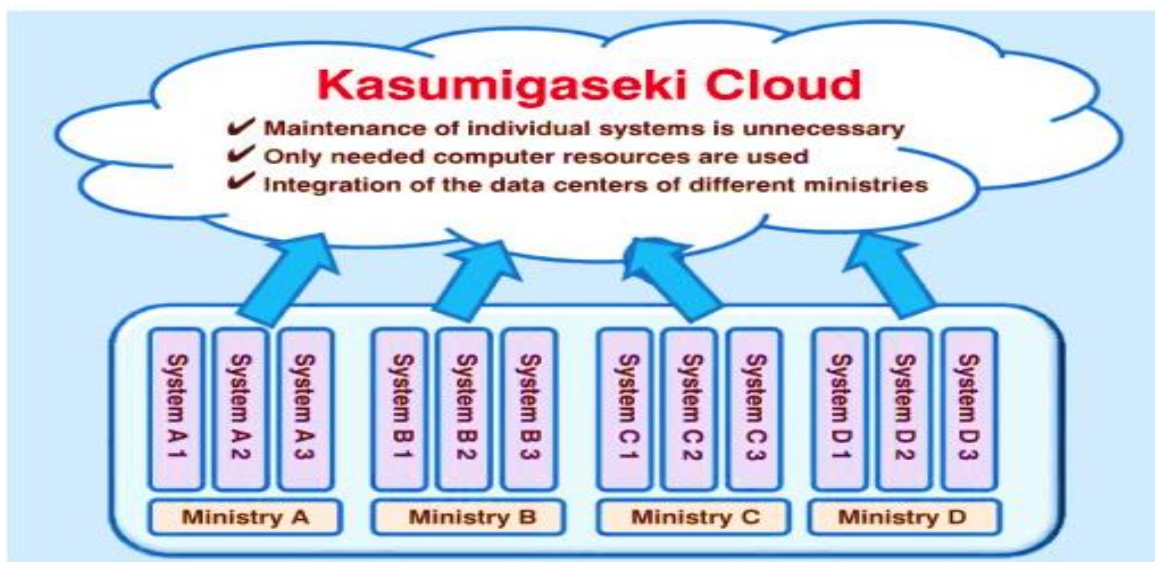


Figure 3: The Japanese Government’s Kasumigaseki Cloud (C.Wyld, 2010)

Cloud computing thus appear to be poised for the rapid growth in the personal, corporate, and governmental aspects as such the developments and expectations within the organization and consumers is becoming the main drivers towards the application of cloud accounting. There are many benefits is being perceived in the application of cloud accounting. The benefits of the application will be further discussed in the next topic to gain an understanding on the advantages that is vital in enabling the cloud computing concept.

1.2 Benefit of Cloud Accounting

There are many benefits being perceived in the application of cloud accounting application within the organization despite of the issues arise from the people, process, and technology. In addition, with a proper migration shift in the technology of computing the people and process can be smoothly trained and human capital won't be affected by the change in the technology. IT leaders play the major role in ensuring the people perceived the benefits in the shift of the technology and process in their day-to-day job scope. The main three benefits that would be discussed further is the cloud computing allows mobility, cost saving and promoting improved security within the organization.

i. Mobility

Scalable cloud computing exists. The business's activities may need to scale up or down quickly, necessitating a swift change of technology and resources. Cloud computing offers mobility to handle these variances. Mobility allows the cloud accounting technology to be accessible easily from anywhere location despite of geographical location differences (Amron, Ibrahim, Chuprat, & Bakar, 2019). Cloud accounting is accessible with any authorized internet network and more readily acceptable by the data centres (Amron, Ibrahim, Chuprat, & Bakar, 2019). Based on (Amron, Ibrahim, Chuprat, & Bakar, 2019), it was also mentioned that cloud accounting mainly emphasizes on the mobility factors as this can be used as the implementation for the any electronic based equipment. In addition, mobility is one the benefit that can be used to change user's perception towards the application of cloud accounting within an organization and there could be an increase in the acceptance of the cloud accounting (Amron, Ibrahim, Chuprat, & Bakar, 2019).

ii. Cost Saving

There are many costs involves when there is a shift of traditional accounting method to automated accounting software. The main cost that is involve in the implementation of the accounting software is on the upfront and later is on the maintenance (Dimitriu & Mateia, 2015). Users of cloud computing only must pay for the services they really utilize. Because the user does not have to buy the infrastructure, maintenance costs are low. There is would a cost saving involved in the implementation due to cloud accounting has a very minimal as cloud accounting does not require any purchases of hardware which is substantially high in cost (Dimitriu & Mateia, 2015).

One of the main areas that has been highlighted as the major role in the shift from traditional accounting to cloud accounting is the cost related. Based on (Khanom, 2017), it was mentioned that with the implementation of cloud accounting, organization doesn't have to make a lump sum investment in the infrastructure which directly minimizes the IT professional fees and helps in minimizing the installation fees as well. In addition, with the installation of cloud accounting, organization don't have to purchase and install updated in a frequent manner and instead minimal annual subscription cost is only required (Khanom, 2017).

iii. Improved safety

The cloud accounting offers various benefits, but it also has an influence on the data security in the virtual environment. Utilizing data encryption, strict access rules, key management, and security intelligence, cloud computing offers high levels of security. In the public sector particularly in Malaysian public sector, security and confidentiality of the data is the focus for any new IT innovation implementation (Mukred, Singh, & Satar, 2017).

However, in the application of cloud accounting, the security can be further improved with a proper steps of procedure application. The application of multiple level of data security can ensure the increased in the data security within the cloud accounting system (Shakya, 2019). In addition, cloud accounting offers proper security system where layers of security is being embedded into the system to ensure improved security system is applied to secure the data (Shakya, 2019). This improved safety system can be adopted by all the cloud accounting storage system within the organization. The three main benefits perceived from the application of cloud accounting has been discussed in depth. By demonstrating the benefits to the people within the organization, this can curb the issues arise from the standpoint of process and technology shift impact on the people. In addition, the resistance by the human towards the change could be reduce within the organization. This happens due to the people would be able to perceived more benefits rather than threat on the jobs as cloud computing improved the method of the job been carried out. Cloud computing will eventually create more job opportunities in near term as the emergence of the new technology will have a change in the process and require more expertise to handle a more sonicated technology (C.Wyld, 2010).

2.0 Methodology

In this study, the researcher has used the method of systematic review of previous work. The previous work from other authors was gathered for us to know the factors influencing the application of cloud accounting in Public Sector.

3.0 Results and Discussion

The emergence of the cloud accounting application in today's technology can eventually increase the competitiveness of the business within the dynamic and challenging environment and directly reducing the computing, accelerating the mobility, and improving the security of the financial information. It would be well recommended that if the organization can move towards the cloud computing application as it contributes to the environment in terms of green and adopting the IR 4.0 which is moving towards a better environments and sustainability of the organization within the competitive business.

The previous decade has been working on continuous development in terms of information technology. As such, the development has been speeded almost within everyone's life. As the current decade, the environment is very dynamic and challenging that forces all the organization to consider a new way of doing business as well as managing the accounting information data

so that the data will be well circulated. The popularity of the cloud accounting is increasing within the organization because of the benefits it presumes to provide the organization. In addition, the business participation such as the business owners, accountant, auditors and stakeholder can be closely updated with the current accounting information as cloud accounting provides mobility and this enable them to close monitor the financial status of the organization. Thus, more economical decisions can be made for organization to avoid any foreseen circumstances.

In addition, this paper might have an implication on the public sectors in promoting the use of cloud accounting and this can help the organization in making an IT investment when implementing the cloud computing. This study can provide a useful information especially in the Malaysian context. This article mainly focuses on the factors such as people, process and technology and the benefit such as mobility, cost saving and improved safety. The findings may therefore does not represent a survey on the population and their perception as whole so as such a sample selection would give an accurate factor that can influence the adoption of cloud computing applications. A qualitative approach such as interviews can be considered to gain in-depth understanding of the factors influence the cloud computing application.

Table 2: Findings Summary

Factors influencing cloud accounting	Benefits of cloud accounting
People	Flexibility
Process	Cost saving
Technology	Improved safety

4.0 Conclusion

In this review article, we briefly discussed on the introduction, factors of influencing the implementation of cloud accounting in public sector and some of its benefits. The application area of cloud computing will continuously be increasing. Today approximately all small and big industries are using cloud computing to manage storage, traffic, hardware requirements. So, there is major impact of cloud computing on society and business. This conceptual paper mainly focusing on the factors and benefits perceived by the user of cloud accounting applications. The article has addressed the cloud accounting paradigm from the perspective of people, process and technology and the business as well. It might become a fundamental factor for all the accountant to reshape our reality and redefining the current globalization as we know that technology allows accountant to prove the worth within the accounting profession which could bring the business to the next level of efficiency.

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Author Contributions

K. G. B. Raj: Abstract, Introduction **C. K. A Singh:** Methodology, Results and Discussion; **N. M. Saad:** Introduction, Conclusion, Editing

Conflicts Of Interest

The manuscript has not been published elsewhere and is not under consideration by other journals. All authors have approved the review, agree with its Submission, and declare no conflict of interest in the manuscript.

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