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Determination of Cloud Storage and IT Infrastructure on File Security

Michal Wasserbauer
Alumni University of Life Science Prague, Czech Republic, email: michal.wasserbauer@gmail.com

*Corresponding Author: Michal Wasserbauer

Abstract: This study discusses the determination of cloud storage and IT infrastructure for file security. The purpose of this study is to find out whether the application of cloud storage plays a role in securing files and implementing IT infrastructure plays a role in securing files. The research method used is descriptive qualitative, which aims to obtain hypotheses for further research. The results of this study include: 1) Cloud storage plays a role in securing files, where by implementing and using cloud storage, companies can more easily access cloud computing. So that it does not require disk space on hardware and 2) IT infrastructure plays a role in securing files, where with adequate IT infrastructure such as: network, hardware and software it will make it easier for companies to secure files. Other IT infrastructure that can be done is in the form of developing the speed of the company's internet network, in addition to making it easier for company employees to convey information. High internet speed is also useful in transferring and securing files and backing up files. If one of the company's hardware is attacked by a virus, the data can be quickly transferred with high internet speed. Another infrastructure is the development of its own applications, so that companies can easily control and operate applications according to the wishes and needs of the company. There are other factors that affect file security, including: 1) Employee performance; 2) Employee education; and 3) Competitive advantage.

Keywords: File Security, Cloud Storage, IT Infrastructure

INTRODUCTION

The development of this technology is growing from time to time, such as better data quality, larger data storage and even faster uploading and sending of data. This supports the need for communication, information dissemination, data processing, data security whose needs are increasingly complex. Communication technology that has developed rapidly with the discovery of increasingly sophisticated 4G data communication networks has even now stepped on to 5G

technology which is of course much faster and more capable. File security in this era of disruption is very important. Things related to files, data and documents are very crucial in today's modern era. The rapid development of digitalization raises its own benefits and drawbacks for companies or organizations. Every company or organization is always associated with files and information technology. Therefore companies need to analyze the IT infrastructure they have and implement it in their current company. In addition, they need to periodically control the system and secure the data used, especially important and confidential company data. In today's digital era, file security is becoming increasingly important due to the increasing number of cybercrime actions, such as hacking and data theft. File security is related to increasingly advanced technological and internet developments, making it easy for anyone to create and publish works online.

In the era of technological transition, from the previous technology to digital technology, both producers and consumers have switched to choosing a more effective technology, namely digital technology. At present people's lives in general have a lifestyle that cannot be separated from internet-based electronic devices. The role of digital technology and the internet has penetrated all aspects of life such as education, health, trade, lifestyle, transportation, and has even greatly influenced the way we work, which is currently very dependent on electronic devices and the internet. File security aims to protect against the risk of theft of company data, food recipes (for F&B companies) and consumer data. Developments related to IT infrastructure are aimed at developing the security of the company or organization itself. With qualified and good IT availability in the company, it makes work easier and does many things at once. Regarding file security, most companies use cloud storage provided by companies such as Google and Apple. Some of them: OneDrive, Google Drive, Dropbox and iCloud. Each of them offers different types of storage. Storage providers also provide storage that is not paid for but the capacity provided is limited. For unpaid iCloud, Apple only provides a storage capacity of 5GB, while Google Drive provides a capacity of 15GB for free. The offers provided by cloud storage providers vary, from monthly to yearly. Various data security techniques are widely implemented in securing data. Classical methods are still relevant in securing files in the current era of disruption.

Formulation of the problem

1. Does cloud storage play a role in securing files ?.
2. Does IT Infrastructure play a role in securing files ?.

LITERATURE REVIEW

File Security

File security is an action taken to prevent actions that are detrimental to the company in terms of systems and data. File security is also intended to protect end-user data (Baidoi, Hardjianto, & Wibowo, 2023). File security is usually carried out by every individual or organization to protect against data theft, system breaches and virus (malware) attacks (Soesanto, Saputra, Puspitasari, & Danaya, 2023a). Indicators of file security include: Originality: meaning that it consists of original files so that the quality of the files is maintained, authorization and encryption: where encryption is carried out so that only one party can access it. Dimensions related

to file security include: 1) Security from hardware: meaning that the hardware contained in the device is difficult to dismantle; 2) Software or software security: where software is uniquely difficult to penetrate through viruses and hacker attacks; and 3) Security of the company itself: which can be applied starting from the employees themselves (Prasetyo, Triandi, & Hardianto, 2018).

Conventional data management does not support daily work activities which of course involve a lot of data. In addition, the heads of this unit find it difficult to get access to information on work progress in real time from each division they lead (Soesanto, Saputra, Puspitasari, & Danaya, 2023b). When they need some data, the leaders of this unit must ask their subordinates to find the data and provide it directly. In terms of sharing data, this is also difficult to implement because employees have to manually copy the data through a copier, which of course requires additional time and costs. In addition, they have to go the extra mile to ensure that all employees from the team they lead have done the filing properly and completely (Astawan, 2022).

Cloud Storage

Cloud storage is a data storage media that can be accessed by its users via the internet network. To be able to access data, users will be connected to the server via a web page (Widagdo, 2018). Cloud storage is a cloud computing model that allows storing data and files on the internet through a cloud computing provider that you access, either via the public internet or a special private network connection. Cloud storage is a computer data storage model that contains digital data stored in logical collections. Cloud storage is only managed by the cloud provider, and includes multiple servers and physical environments usually owned and managed by the hosting company. Cloud storage indicators include: 1) Storage capacity; 2) Reliability and availability; and 3) Data transfer speed. The dimensions attached to cloud storage include: 1) Scalability; 2) Security; 3) Integration and compatibility; and 4) Price (Wulandari & Ganggi, 2021). Cloud storage that is currently widely used by users or companies in the form of Google One Drive, Dropbox, iCloud and Google Drive.

Conventional data management and storage requires quite a lot of budget to prepare a number of supporting things, namely rooms, shelves/storage cabinets, procuring paper, procuring/maintaining printers, procuring ink, and purchasing other supporting office stationery. In terms of data security, it is also a serious concern for data management that was carried out conventionally before. As time goes by, the quality of data stored in paper form will quickly decline and be vulnerable to loss or damage due to things that can happen, such as natural disasters, fire, theft, etc. Data is also difficult to back up because it has to be duplicated one by one which of course requires a long processing process and additional storage space.

IT Infrastructure

Information technology infrastructure is a long-term asset commonly referred to as value to generate value from an organization. Good system management can be done if it is according to the standards that apply in an organization (Zultaqawa, Alexandri, Rizal, Kostini, & Aulia,

2019). In management there are often problems, especially problems in funding, therefore funding is a factor that greatly influences the continuity of information technology infrastructure. If funding can be managed properly from an organization, information technology infrastructure can develop effectively and efficiently. Information technology infrastructure development requires funding in such a way as to facilitate all types of work so that work becomes more effective (Permadi, Purtina, & Jailani, 2020).

Conventional data management systems and still using paper media are no longer relevant to be fully implemented. At this time all employees are required to be able to work effectively and quickly, so that in the work process requires a system that supports them to be able to process, store and access work data quickly and accurately (Widjanarko, Saputra, & Hadita, 2023). This will be difficult to do if the data management system is still manual and stored in general data storage areas such as shelves/cabinets. Storage of data in paper form also requires a large enough data archive storage area. This is because the data will always increase every day which of course must be stored for a certain period of time (Sidabutar, 2020). Apart from that, from the Human Resources (HR) side, it is necessary to have staff specially assigned to manage the storage and maintenance of archived data. Because data tends to be damaged quickly if periodic handling is not carried out, such as maintaining cleanliness and controlling room humidity, preventing mold, and keeping data in a dry/non-humid room (Soputan, Sompie, & Mandagi, 2014).

IT infrastructure indicators include: 1) Hardware device platforms; 2) Software device platforms; 3) Data management and storage; 3) Network platforms; 4) Internet platforms; 5) System integration services and consulting; and 6) Operating system platforms (Astawan, 2022)

Previous Research

Table 1. Previous Research

No	Author (Year)	Previous Research Results	Simmilarities with this article	Difference with this article
1	(Baidoi et al., 2023)	Implementation of the Advanced Encryption Standard Algorithm for File Security at SMP Negeri 189 West Jakarta	Discuss about file security	There are differences in the independent variables, namely the advanced encryption standard algorithm and the locus at SMP Negeri 189 West Jakarta
2	(Prasetyo et al., 2018)	Designing a Text File Security Application with a Hybrid Scheme Using the Enigma Algorithm and the RSA Algorithm	Discuss about file security	There are differences in application design variables using a hybrid scheme
3	(Astawan, 2022)	Implementation of E-Filling System as a Cloud-based Media Groups Company Data Storage Center using the Google One Application	Discuss about cloud storage	There is a locus of research, namely the company's media groups

4	(Wulandari & Ganggi, 2021)	Experience in using cloud storage for Computer Engineering students at Diponegoro University (Undip) in managing digital archives	Discuss about cloud storage	There is a research object, namely Computer Engineering students at Diponegoro University (Undip)
5	(Zultaqawa et al., 2019)	Effects of accessibility, IT and competitive action on micro, small and medium enterprises	Discuss about IT infrastructure	There are differences in the accessibility and MSME variables
6	(Permadi et al., 2020)	The Influence of Utilization of Information and Communication Technology on Learning Motivation	Discuss about IT infrastructure	There are differences in learning motivation and communication variables

RESEARCH

This research uses descriptive qualitative methods and library research. By reviewing previous articles that are relevant to this research. The purpose of this study is to build a hypothesis that is useful for further research. Literature review should be used consistently with the assumptions of a qualitative research methodology. So as not to raise questions that will be asked later by researchers. One of the reasons for conducting qualitative research is because it is exploratory in nature (Ali, H., & Limakrisna, 2013). The data used in this study are previous articles with exogenous variables related to this research such as cloud storage and IT infrastructure and endogenous variables, namely file security. The data is obtained from the Google Scholar application source and uses Mendeley as a reference tool and bibliography.

RESULT AND DISCUSSION

Based on the literature review, the researchers discussed the relationship between variables as follows:

The role of cloud storage for file security

Cloud storage is a computing storage platform that can be used as storage media without requiring physical storage. Currently, cloud storage is very important, especially for companies or organizations, in fact, every individual is starting to use cloud storage a lot. In implementing cloud storage, it allows users to store data and files on the internet through cloud computing providers that can be accessed at any time. In addition, the application of cloud storage also facilitates collaboration with other people or colleagues in real time, so that if data is lost (data is deleted) it can still be backed up by the cloud that is logged in to other people. If the company is able to apply reliability, speed and storage capacity then file security will be able to be implemented which includes: 1) Hardware security: meaning that it will save space usage on hardware storage, so that security is better maintained; 2) Software security: where the use of cloud storage run by the provider makes the computer work system lighter so that applications can run properly; and 3)

Corporate security: where cloud storage acts as a backup in the event of data loss on company hardware.

The storage media that was implemented previously was still local, which was carried out on each employee's desktop/laptop Hard Disk Drive/SSD. In terms of data security, the implemented system is deemed to have low security. The stored data is very vulnerable to damage and even data loss. Data management that is only placed on local computer storage and has not been made in a systematic structure, will later have the potential to cause obstacles in the implementation of business processes related to data access, management and sharing processes. Apart from not requiring a large area, digital data is also easy to archive and share with those who need the data. The development of a paperless data storage system can also affect the level of employee satisfaction with the company, especially related to satisfaction with the facilities provided by the company.

Google One is a cloud service developed by the giant company, Google. Usually people use Google Drive to store data, but Google Drive only provides a storage capacity of 15 GB and this capacity is still lacking to store data whose accumulated size is much larger. Google One is a renewal of Google Drive which offers various features and advantages such as adequate storage capacity and several other advantages. There are several advantages of Google One, such as: 1) users have the opportunity to get a larger storage capacity, even up to 2 TB; 2) users can share membership and share storage capacity with family members, 3) storage capacity includes Google Drive, Gmail and Google Photos services.

Cloud storage plays a role in securing files, has been studied by previous researchers, among others: (Motlagh, Mohammadrezaei, Hunt, & Zakeri, 2020), (Widagdo, 2018), (Wulandari & Ganggi, 2021).

The role of IT infrastructure for file security

IT infrastructure is a component contained in information technology including networks, hardware and software. IT infrastructure is very supportive in information and data transfer activities in companies or organizations. The network becomes a support in surfing data transfers, with a high and strong network speed, information and decision making will be obtained faster so that file security is better (Al-Nuaimi & Al-Emran, 2021). Hardware is part of the infrastructure that carries out operational activities in the company. Powerful hardware makes work easier and supports any system updates or configurations, so security can always be improved. Software is a part that is used by hardware, software that is relevant to file security such as antivirus and avoiding non-original software has a good impact on file security in the company (Andriyanto, 2018).

In the world of work, the development of digital technology has brought major changes to the way of working, communicating, marketing products/services, and managing and storing data. In terms of managing and storing data, the development of this technology can be a solution for companies in storing data digitally/paperless by not using paper which certainly does not require a special area/room for storage. (Mulyani, Zamzami, & Zendrato, 2019). Most companies are starting to develop paperless office systems that will replace conventional office administration systems. In addition to focusing on digitizing all managed data, the system developed must be in

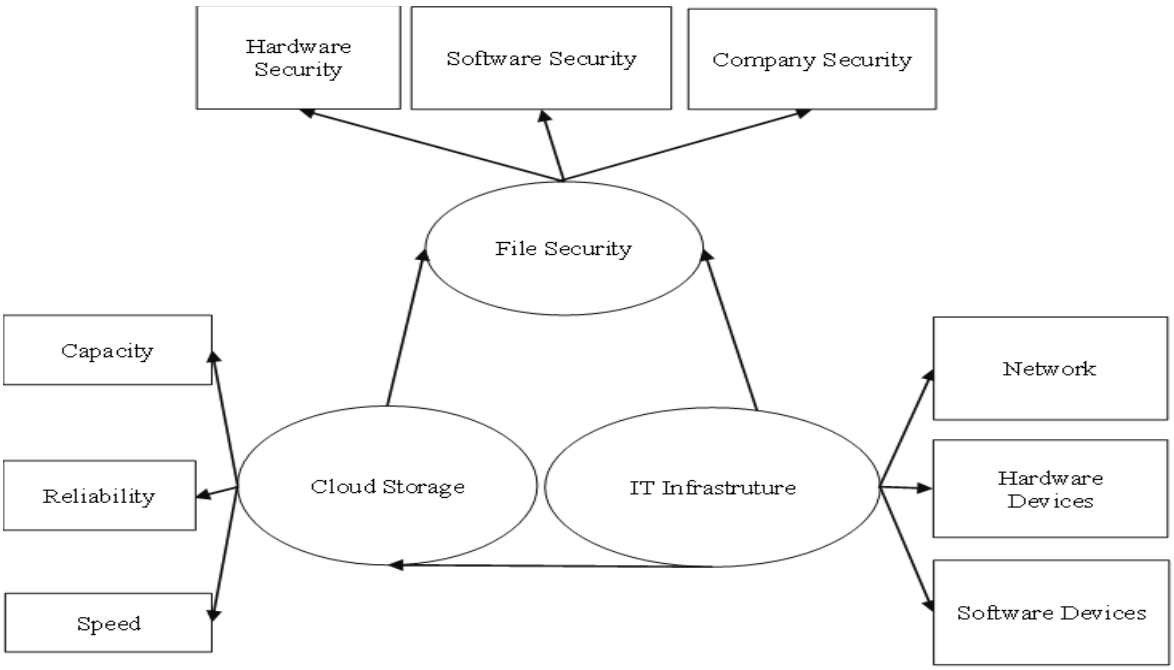
accordance with the business process flow of each company and technically the implementation of the system can be understood by all employees. This is important to ensure that the system is truly effective in facilitating and speeding up all business processes that are carried out every working day (Renaldi, 2022). Digital data storage is safer than paper storage. Apart from not requiring a large area, digital data is also easy to archive and share with those who need the data. The development of a paperless data storage system can also affect the level of employee satisfaction with the company, especially related to satisfaction with the facilities provided by the company.

Other IT infrastructure that can be done is in the form of developing the speed of the company's internet network, in addition to making it easier for company employees to convey information. High internet speed is also useful in transferring and securing files and backing up files. If one of the company's hardware is attacked by a virus, the data can be quickly transferred with high internet speed. Another infrastructure is the development of its own applications, so that companies can easily control and operate applications according to the wishes and needs of the company (Adhi & Aima, 2021).

IT infrastructure plays a role in securing files, has been studied by previous researchers, among others: (Astawan, 2022), (Soputan et al., 2014), (Sidabutar, 2020).

Conceptual Framework

Based on the literature review, the researchers determined the conceptual framework as follows:



Picture 1. Conceptual Framework

This article discusses the determination of cloud storage and IT infrastructure for securing files. Where in implementing file security the application of cloud storage and infrastructure is very important. Apart from cloud storage and IT infrastructure, there are other factors that affect file security, including:

1) Employee performance: (Pakpahan & Noviandy Aulia, 2022), (Tirtayasa, 2019), (Damarasri & Ahman, 2020).
2) Employee education: (Muktiana, 2014), (Irdaningsih, Parwoto, & Badawi Saluy, 2020), (Anwar & Muhammad Havidz Aima, 2020).
3) Competitive advantages: (Chong & Ali, 2022), (Desfiandi, Fionita, & Ali, 2017), (Sari & Ali, 2019).

CONCLUSION

Based on the literature review and discussion above, the researchers determined the following conclusions:

1. Cloud storage plays a role in securing files, where by implementing and using cloud storage, companies can more easily access cloud computing. So it does not require disk space on the hardware.
2. IT infrastructure plays a role in securing files, where with adequate IT infrastructure such as: network, hardware and software it will make it easier for companies to secure files. Other IT infrastructure that can be done is in the form of developing the speed of the company's internet network, in addition to making it easier for company employees to convey information. High internet speed is also useful in transferring and securing files and backing up files. If one of the company's hardware is attacked by a virus, the data can be quickly transferred with high internet speed. Another infrastructure is the development of its own applications, so that companies can easily control and operate applications according to the wishes and needs of the company.

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