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THE COMPETITIVE ADVANTAGES IN UTILIZING CLOUD COMPUTING SERVICES (CCS): A BIBLIOMETRIC-SYSTEMATIC LITERATURE REVIEW (B-SLR) METHOD

Abstract: *This study investigates the factors and trends that allow organisations to achieve competitive advantages via Cloud Computing Services (CCS). Since 2017, the extensive implementation of CCS has enabled businesses to provide enhanced products and services at competitive prices, while maintaining accessibility and countering competitors' offerings. Nonetheless, insufficient skilled personnel could hinder the optimal implementation of CCS, placing organisations at a competitive disadvantage. This study employs a multi-method approach, integrating a Systematic Literature Review (SLR) and Bibliometric Analysis (B-SLR) to investigate the potential of CCS in improving competitive positioning. Research indicates that organisations should invest in strengthening their Information Systems (IS) processes to optimise the benefits of CCS, ensuring coherence with strategic objectives and operational requirements. This study enhances the comprehension of the strategic role of CCS in business and offers insights for organizations to refine their strategies, optimize CCS usage, and improve market competitiveness.*

Keywords: *competitive advantages, information system processes, cloud computing services, systematic literature review, bibliometric analysis, bibliometric-systematic literature review*

1. Introduction

In recent years, Malaysia has undergone a notable transition in its digital landscape, with cloud computing services (CCS) playing a crucial role in propelling technological progress. CCS have revolutionized the way organizations and people store, manage, and access data and applications, making it an essential element of the country's digital economy. The growing number of hyperscalers offers a point of entry for businesses looking to reach the almost 27 million internet consumers in the nation (Raj, 2023). Although a number of businesses in Malaysia have previously dabbled in CCS, there is now a growing interest in moving to the cloud permanently. This is due to the increased availability of domestic public cloud capacity, especially around the start of the COVID-19 outbreak in 2019 (Raj, 2023). Most organizations allocate a significant amount of time and effort towards conventional company marketing. Nevertheless, the implementation

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of information technology developments has transformed the way individuals conduct tasks by automating pre-existing activities. Accelerated technological and product life cycles compel organizations to embrace rapid development while maintaining cost-efficiency (Sharma, Gupta, & Acharya, 2021).

Various organizations, including Salesforce Inc., Dell EMC, Oracle Cloud Platform, and Sap National Security Services, Inc., have implemented CCS due to its benefits, such as the ability to easily adjust resources, scalability, reliability, wide network access, cost-effectiveness, and sustainability (Sharma, Gupta, & Acharya, 2021) (Buyya, Yeo, Venugopal, Broberg, & Brandic, 2009) (Arpaci, 2016) (Wang, et al., 2016) (Younas, et al., 2019). In order to gain a competitive advantage through CCS, organizations must employ highly skilled personnel to manage the creation and administration of these services. Highly competent team members play essential roles in both the managerial and technical elements of management. From a managerial perspective, competent leaders and managers are crucial for devising strategies, formulating plans, and supervising the incorporation of CCS into the organization's operations. Such a highly competent team can guarantee that cloud efforts are aligned with broader business objectives, effectively manage finances, and promote innovation (Mell & Grance, 2011). Efficient management fosters a culture of ongoing enhancement and adaptability, which is crucial in a swiftly evolving technological landscape (Armbrust, et al., 2009). When it comes to technical management, it is equally important to have team members who possess a high degree of technical understanding. These personnel are accountable for the practical implementation, upkeep, and enhancement of cloud infrastructure. Their expertise guarantees the security, resilience, and optimal performance of the cloud environment (Zhang, Cheng, & Boutaba, 2010). Additionally, they have a crucial function in resolving problems, adjusting resources to match the level of demand, and implementing optimal methods for data management and compliance (Rittinghouse & Ransome, 2016). The cooperation between competent management and technical teams allows organisations to optimize the advantages of CCS, leading to enhanced operational efficiency, reduced costs, and securing a more robust market position. Insufficiently skilled employees might hinder organizations from fully using the capabilities of cloud technology, placing them at a disadvantage compared to their competitors.

SLR is a research method that involves identifying and analyzing data through the collection of empirical evidence based on predetermined inclusion criteria. This process is used to address formulated research questions (Mengist, Soromessa, & Legese , 2020) (Snyder, 2019)Meanwhile, bibliometric analysis is a method of quantitative research that systematically identifies trends and analyzes research. SLR is a rigorous and reproducible procedure that systematically collects and assesses current literature in an unbiased manner, guaranteeing thorough coverage (Mengist, Soromessa, & Legese , 2020). Bibliometric analysis offers quantitative insights into the patterns of publication and the impact of research (Moed, 2006). By employing these techniques, researchers can gain a thorough understanding of research areas and effectively guide future endeavours (Petticrew & Roberts, 2006). Thus, to investigate the elements influencing organizations' competitive advantages through the application of CCS and to pinpoint current trends, this study employs an SLR and bibliometric analysis. The following objectives guided the researchers in this SLR and bibliometrics analysis:

RO1: To investigate the factors that contribute to the attainment of organizations' competitive advantages through the utilisation of cloud computing services.

RO2: To ascertain the current pattern of attaining organizations' competitive advantages through the utilization of cloud computing services

The SLR methodology was employed to support RO1, which explores the factors contributing to an organization's competitive advantages through the use of CCS. Simultaneously, bibliometric analysis was applied to enhance the depth of RO2, focusing on identifying current trends related to gaining a competitive advantage through CCS. The objective of this research is to integrate both bibliometric analysis and SLR, with the aim of developing a comprehensive framework for understanding how organizations achieve competitive advantages through the use of CCS.

2. Literature review

2.1 Competitive Advantages

The competitive advantage is undeniably a crucial factor in the assessment of an organization's performance. The competitive advantage denotes an organization's capability to surpass its competitors in producing goods or delivering services. This superior performance results in higher profitability and the creation of value for both the business and its stakeholders. A competitive strategy is a comprehensive framework that delineates an organization's approach to managing competition, its objectives, and the requisite strategies and policies to effectively attain those objectives (Porter, 1985). Numerous scholars posit that the primary objective of every organisation is to achieve a competitive advantage within its respective industry (Turban, Sharda, Aronson, & King, 2008). Understanding the importance of the competitive advantages is crucial for an organization's success or failure. It aims to gain market control and achieve higher profits compared to the industry average (Porter & Millar, 2009; Porter, 1996). Contemporary times have witnessed a persistent upward trajectory in customer expectations, which necessitates the provision of high-quality products in a timely manner, with the utmost convenience, and at equitable prices. As a result, the competition among organizations is characterised by its dynamic nature, as each entity endeavours to utilise efficient strategies and tools to effectively navigate intricate and uncertain demands, meet customer requirements, and sustain its position as a market leader. The advent of information and communication technology (ICT) has catalysed the emergence of diverse tools, including cloud computing, which possess the potential to augment efficiency, optimise operational processes, and mitigate expenses.

2.2 CCS and Competitive Advantages

CCS, an emerging technology utilized by almost all organizations nowadays to secure a competitive advantage, has several benefits as well as challenges (Truong, 2010). CCS, comprising several organizations, computers, and networks, can be freely accessed through the Internet. It facilitates group collaboration through a collection of computers, servers, applications, and the Internet (Mirashe & Kalyankar, 2010). CCS uses centralized and shared infrastructure which leverages on economies of scale and reduces costs to customers (Micheal, 2010). Additionally, CCS is an information technology (IT) service that uses hardware and software to satisfy customers' requirements over the Internet (Liu & Prybutok, 2021) by lowering expenses and improving planning accuracy, order execution speed, delivery time, management of complaints, quality control, refunds, and flexibility, all of which strengthen an organization's competitive position (Nowicka, 2016). Having said that, organizations leveraging on CCS need to strike a balance between cost and quality since customers are worried about both (Kilcioglu & Rao, 2016). CCS related services impact competition in terms of price

as it raises profit margins while lowering prices (Kilcioglu & Rao, 2016).

CCS enables organizations to secure a competitive advantages by leveraging on group cooperation, facilitating procurement of resources from any location, and lowers costs through economies of scale. For CCS businesses to satisfy clients, cost and quality should be balanced. Moreover, as it can boost profits and reduce prices, the utilization of CCS can affect pricing competitiveness. All things considered, CCS can provide many advantages that might improve a company's competitiveness.

2.3 Systematic Literature Review (SLR)

A SLR is a rigorous academic approach that seeks to discover and assess all pertinent literature on a particular subject to draw definitive findings regarding the specific inquiry at hand. A SLR is undertaken to clarify the state of existing research and the implications that can be drawn from this (Feak & Swales, 2009). A SLR can demonstrate the current state of research on a topic, while identifying gaps and areas requiring further research with regard to a given research question. The SLR technique is premised on a theoretical basis that can deliver a deeper understanding of the topic at hand with the aim of reducing bias and ensuring comprehensive literature integration, thereby increasing the validity and reliability of the information produced.

A SLR is a rigorous and comprehensive approach to gathering and analyzing all relevant literature on a specific topic. The processes involved in the SLR include defining the database, defining the keywords, defining the inclusion and exclusion criteria, extracting and analyzing the data based on the literature examined to answer the research questions (Xiao & Watson, 2017).

2.4 Bibliometric Analysis

A bibliometric analysis refers to the methodical and structured investigation of bibliographic data with the purpose of discerning and scrutinising patterns and trends within the specific area of research. Bibliometric analysis which has gained popularity in business research (Naveen, Satish, & Debidutta, 2020; Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021; Khan, Nasir, & Saleem, 2021) is a quantitative approach that uses mathematical and statistical techniques to assess the connections and influences of publications, authors, organizations, and nations. The aforementioned analyses provide valuable insights pertaining to academic trends, the dissemination of know advantages, and the influence of research endeavours. In the field of information management systems, scholarly investigations are undertaken to scrutinise the patterns of publication, networks of citations, and the progression of themes with the aim of discerning novel subjects and noteworthy authors. (Kovačević, Putnik, & Tošković, 2020). Within this area, scholars engage in the examination of various aspects such as research productivity, collaboration networks, and the dissemination of information management theories. These investigations serve to broaden and deepen scholars' understanding of the intellectual terrain within this field (Chae, 2018). Within the broader domain of information management, bibliometric analyses are conducted to investigate the dissemination of know advantages, collaborations among various disciplines, and the practical implementation of information management theories. Moreover, in the arena of business, these investigations examine various aspects including the impact of business theories on real-world implementation, patterns in innovation, and interdisciplinary collaborations (Durach, Kembro, & Wieland, 2017; Kianto, Vanhala, Ritala, & Hussinki, 2020). Bibliometric analyses play a pivotal

role in the advancement of scholarly discourse, the establishment of research objectives, and the facilitation of collaboration among diverse academic disciplines.

Bibliometric analyses involve the utilisation of software tools such Gephi, Leximancer and VOSviewer to examine various aspects of scholarly works. These tools enable the analysis of publication patterns, citation networks, co-authorship relationships, and thematic evolution. The aforementioned tools offer significant insights into the prevailing scholarly trends, the dissemination of know advantages, and the impact of research. VOSviewer, a widely favoured option within the research community, presents a user-friendly interface and a range of robust functionalities. This software enables researchers to effectively visualise bibliometric data in diverse formats, such as network maps and density maps. The identification of key clusters, influential authors, and emerging topics within a given field is facilitated by this tool. The study conducted by (Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021) employed VOSviewer as a tool for examining bibliometric data pertaining to a particular research subject. This analysis yielded valuable visualisations and metrics that enhanced the researchers' comprehension of the research environment and its associated ramifications. The utilisation of software tools such as VOSviewer, in conjunction with stringent quality standards, guarantees the efficient execution of bibliometric analyses, resulting in significant findings that augment the influence and pertinence of research endeavours.

3. METHODOLOGY

3.1 Systematic Literature Review (SLR)

The SLR method is a commonly used research method in various fields and has been applied in several similar studies (Wang, et al., 2016; Twala & Kekwaletswe, 2019; Anwar, Masrek, & Abdullah Sani, 2017; Zulkifli & Abas, 2022). SLR is a systematic and structured approach to identify, appraise, and synthesize the existing evidence on a specific research question or topic. It provides an overview of the current state of know advantages and helps to identify gaps in the literature, inform future research, and make evidence-based decisions. Figures 1 illustrates the steps in conducting a SLR.

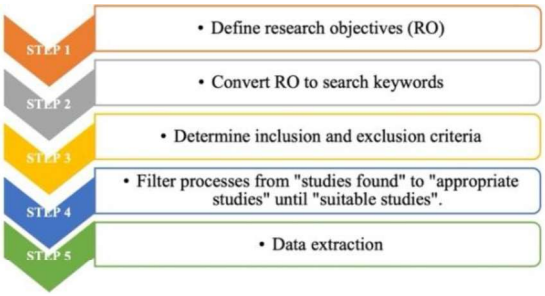

Figure 1. Steps in Conducting SLR

3.1.1 Define Research Objectives (RO)

The researcher's first step in implementing a SLR is to establish clear research objectives (RO) that are relevant to the study being conducted. This includes stating the purpose of the review, the key research questions, and the expected outcomes. To guide the review process, the study's objectives should be precise, focused, and aligned with the overall goal (Kitchenham, 2004). For

example, the objective of this study is to investigate the factors that contribute to an organization's competitive advantages and to determine current trends in achieving the competitive advantages using CCS.

3.1.2 Search Keywords

After determining the research objectives, the next step is to translate these objectives into search keywords. These keywords must include the primary concepts and themes of the research objective, as they will be used to locate relevant studies in the electronic database. Keywords can comprise synonyms, related terms, and Boolean operators (AND, OR, NOT) to form a comprehensive search string that improves the retrieval of relevant literature (Booth, 2016).

In this study, researchers have conducted a search for previous studies utilising keywords categorised into three iterations. The first (1^{st}) and second (2^{nd}) iterations utilise keywords associated with the independent variable, whereas the third (3^{rd}) iteration employs keywords pertaining to the dependent variable. During this phase, the researchers conducted a thorough search by repeating the process several times, each with a different keyword. The search results were then classified into fifteen distinct resource databases as shown in Table 3. The sources of the database used were categorised into two distinct types of search focus, as illustrated in Table 1 below.

Table 1. List of online database-specific Searches

Search Focus	Search Online Database
Conference	Academia, ACM Digital Library, EBSCOhost, Google Scholar, IEEExplorer, ResearchGate, SpringerLink,
Journal	Academia, ACM Digital Library, CiteseerX, EBSCOhost, Google, Google Scholar, Emerald Insight, IEEExplorer, ProQuest, ResearchGate, ScienceDirect, Semantic Scholar, SpringerLink, Taylor & Francis Online, Wiley Online Library.

3.1.3 Inclusion and Exclusion Criteria

In the SLR process, setting inclusion and exclusion criteria is an important step after conducting a comprehensive search of the literature. The inclusion criteria define the characteristics that studies should possess to be included in the SLR, while the exclusion criteria define the characteristics that studies should not possess to be excluded.

The subsequent step entailed the identification of a scholarly article that was relevant to the research question. A total of 309 articles were procured, all of which were found to be associated with the research question. Afterwards, a method of exclusion was used to determine the best suitable paper that could tackle the research problem and meet the set criteria. All the journal or conference papers or proceeding papers found are ineligible if at least one of the following criteria is met [39]:

Table 2. Filtering criteria for searching

Criteria	Explanations
1	It does not emphasize the desire or intent to utilize CCS.
2	Its length is 2 pages or less.
3	Its focus does not emphasize the form of competitiveness for an organization. (e.g: utilization research in healthcare or education)
4	It does not apply any use of CCS as a competitive advantage point of view.
5	It has no original content (e.g.: a proposal only describing planned research).

3.1.4 Filtering Processes

After setting the inclusion and exclusion criteria, the next step in this SLR was to collect all articles that meet the criteria. The researcher would typically use an online database to search for relevant studies and then using the inclusion and exclusion criteria, identify those that should be included in the SLR. After that, the researcher will filter the studies in an SLR into three categories: Found, Appropriate, and Suitable.

Figure 2. The process of filtering studies in a SLR

Figure 2 shows a step-by-step process for identifying relevant studies in a SLR, focusing on filtering research papers from an initial broad search to a more refined and useful selection. The process consists of three main stages:

i. Studies Found:
   This is the first phase of SLR, where the researcher conducts a comprehensive search using predetermined keywords. Keywords are derived from the research objectives described earlier. The goal at this stage is to collect as many relevant studies as possible that can further strengthen the objective of the study. The studies identified here form a large pool from which further refinement will take place.

ii. Appropriate Studies
   Once the initial set of studies is gathered, the next step involves screening the abstracts to ensure alignment with the research objectives. In this phase, the researcher applies the inclusion and exclusion criteria to filter out irrelevant studies. This ensures that only studies that potentially offer valuable insights or methodologies are retained. The goal of this step is to refine the broad set of "studies found" to a more focused collection of studies, referred to as "appropriate studies" which align more closely to the research objectives.

iii. Suitable Studies
   After identifying "appropriate studies", a third and more in-depth analysis is conducted to refine this collection into "suitable studies". This involves a full-text review of studies to identify those that provide robust research models, frameworks or empirical data that can be used to support the research objectives. At this stage, studies that lack methodological rigor or relevance to the research objective are excluded, only retaining the most relevant studies that will form the basis of the SLR analysis.

These structured processes ensure that the researcher progresses from a large pool of potential studies to a more refined set of studies that are directly relevant to the research objectives, thereby improving the quality and focus of the literature review.

3.2 Bibliometric Analysis

Scopus and Web of Science comprise the most significant publications in computer science, statistics, engineering, and mathematics. Figure 3 outlines the procedures involved in undertaking a bibliometric analysis using Vosviewer, as described by (Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021).

Figure 3. Bibliometric Research Stage

The researcher compiled a comprehensive overview of the variables and dimensions commonly utilized in previous research studies, based on a selection of 54 research articles that met the specified criteria. Table 4 below provides a comprehensive overview of the commonly employed research dimension, which have been categorized into multiple variables.

3.2.1 Research Objectives

Similar to a SLR, the most important part of a bibliometric analysis is to clearly set research objectives (RO) that are relevant to the study being conducted. The purpose of this step is to form the basis of bibliometric analysis, help focus the study and identify what the researcher wants to investigate. By defining different objectives, such as understanding the development of a particular domain, recognizing prominent contributors, or determining notable patterns, the overall examination is directed and organized to meet these focused results. Without a clear objective, it becomes difficult to ensure that the analysis is relevant or meaningful.

3.2.2 Searching for Dataset

After establishing clear research objectives, the subsequent step is to seek for the relevant data sets. The dataset employed in this study incorporates a wide array of data sources to obtain unprocessed citations. These citations are then subjected to analysis, resulting in the presentation of various citation metrics. These metrics include the count of papers, the total number of citations, and the h-index. Hence, in this study, publish or perish applications were employed to collect datasets from prior studies as an integral component of the bibliometric analysis procedure, which commenced based on the specific research subject matter.

The researcher utilised Publish or Perish application software to search through various academic databases such as Academia, ACM Digital Library, CiteseerX, EBSCOhost, Google, Google Scholar, Emerald Insight, IEEExplorer, ProQuest, ResearchGate, ScienceDirect, Semantic Scholar, SpringerLink, Taylor & Francis Online, and Wiley Online Library. The term "competitive advantages" was employed as the primary focus of the data search conducted within the Scopus database, in conjunction with several additional criteria such as:

- The present study focuses on the examination of research publications published within the time frame of 2014 to 2024, specifically within the Scopus database.
- Placing a Strong Focus on Competitive Advantages

- Empirical investigations conducted in the English language

This study only uses the data set obtained from Scopus by using the Publish or Perish application because Scopus is widely regarded as one of the premier academic databases, outperforming many others due to its comprehensive coverage, multidisciplinary scope, and advanced analytical tools. Scopus indexes over 25,000 journals from more than 5,000 international publishers, ensuring extensive coverage across scientific, technical, medical, and social sciences disciplines (Abbott, 2024). This broad range makes Scopus invaluable for conducting thorough literature reviews and supporting interdisciplinary research. Additionally, Scopus is known for its timely updates, providing researchers with the most current articles and citation data, which is crucial for staying updated with the latest developments in their fields (Burnham, 2006). Scopus also excels in offering robust citation analysis tools, such as the h-index and various author and journal impact metrics, enabling researchers to track the influence of their work and that of their peers effectively (Falagas, Pitsouni, Malietzis, & Pappas, 2007). Its advanced search capabilities and filtering options allow users to locate relevant articles efficiently, enhancing the overall research process. Furthermore, Scopus provides detailed author profiles that include publication histories and citation counts, aiding in the assessment of research productivity and influence (Meho & Yang, 2007). The database's integration with other research tools and its stringent criteria for journal inclusion, which ensures high-quality content, further contribute to its superiority (Abbott, 2024). These features collectively make Scopus a preferred choice for researchers and institutions seeking a reliable and comprehensive resource for academic research.

3.2.3 Check Complete Abstract and Keywords for All

Upon obtaining the dataset via the utilization of the Publish or Perish application, a thorough examination of the data will be carried out utilizing the Mendeley Desktop application. The objective of this analysis is to determine the extent to which the dataset, which includes the abstracts and keywords, is complete. For incomplete data sets, abstracts or keywords should be entered manually. The utilization of a complete data set containing both abstracts and keywords is of utmost significance as it enables the application of the occurrences function within the VOSviewer software. The utilization of this function will facilitate the identification of the most pertinent and recurrent themes within the dataset, thereby offering valuable insights that can be utilized for subsequent research or analysis purposes. Moreover, the presence of a meticulously structured dataset containing comprehensive information will further enhance the ease of collaboration and the dissemination of research findings among fellow researchers within the same domain.

3.2.4 Describe the Finding

The subsequent step entails the researcher thoroughly examining the selected study. This step covers summarizing the main contributions of the selected papers, emphasising the methodologies employed, primary findings, emerging trends, and any limitations identified. An overview is provided regarding the existing literature on the research topic. This step is crucial in synthesising information from various studies, enabling the identification of common themes and gaps in the literature. This approach allows the researcher to gain a deeper understanding of the field before proceeding with detailed analysis.

3.2.5 Analysing the Dataset

The final step is to conduct a detailed analysis of the dataset. For this step, the researcher uses the Vosviewer application software which helps to visualize the relationships within the data. The data is presented in a graphical format, thereby enhancing the understanding of the results obtained from visual analysis. Additionally, this format facilitates the process of exploration and the identification of new and innovative insights (Sajovic & Podgornik, 2022). This visual representation will allow for a more comprehensive interpretation of the data, aiding in the identification of patterns and trends that may not be immediately apparent from textual analysis alone. Furthermore, the use of visualisation tools can enhance the communication of findings to a wider audience, making the research more accessible and impactful.

4. RESULT

To support the research objectives of this study, the researcher conducted a SLR and performed a bibliometric analysis.

4.1 Systematic Literature Review (SLR) Analysis

The SLR technique was employed to provide support for RO1: "To investigate the factors that contribute to the attainment of competitive advantages through the utilisation of cloud computing services". As stated in sub-heading, i.e., 3.1 Systematic Literature Analysis (SLR): B. Search Keywords, the researcher conducted a thorough search by repeating the process several times, each time with different keywords. The search results were then classified into fifteen different source databases as shown in Table 3 (see Appendix).

The researcher compiled a comprehensive overview of the variables and dimensions commonly utilized in previous research studies, based on a selection of 54 research articles that met the specified criteria. Table 4 below provides a comprehensive overview of the commonly employed research dimension, which have been categorized into multiple variables.

Table 4. Frequency of dimensions in achieving a competitive advantage

Variable	Dimension	References	No. of dimension count
Technology	uncertainty, compatibility, complexity, services quality, mobility, cost saving, triability, security & privacy, reliability, geo-restriction, relative advantages	(Al-Sharafi, Arshah, & Shanab, Factors affecting the continuous use of cloud computing services from expert's perspective, 2017) (Alshamaila, Papagiannidis , & Li, 2013) (Sallehudin, et al., 2021) (Sharma, Gupta, & Acharya, 2021) (Cheng, What drives cloud ERP continuance? An integrated view, 2018) (Cheng, Drivers of physicians' satisfaction and continuance intention toward the cloud-based hospital information system, 2020) (Tehrani & Shirazi, 2014) (Can & Ercan, 2020) (Sallehudin, Razak, Ismail, Md Fadzli, & Baker, 2018) (Fathey, Ibrahim, & Alzurqa, 2016) (Mudawi, Beloff, & White, 2019) (Amron, Ibrahim, Abu Bakar, & Chuprat, 2019) (Sabi, Uzoka, Langmia, Njeh, & Tsuma, 2017) (Al-Sharafi, Arshah, & Shanab, Factors Influencing the Continuous Use of Cloud Computing Services in Organization Level, 2017) (Al-Sharafi, Arshah, & Shanab, Questionnaire Development Process to Measure the SMEs' Continuous Use behavior towards Cloud Computing Services, 2019) (Al-Sharafi, AlAjmi, Emran, Qasem, & Aldheleai, 2021) (Ming, On, Rayner, Guan, & Patricia, 2018) (Alshamaila, Papagiannidis , & Li, 2013) (Karkonasasi, Baharudin, Esparham, & Mousavi, 2016) (Ifinedo, 2011) (Jere & Ngidi, 2020)	11

Organization	size of the company, top management support, cost saving, prior technology experience, innovativeness, trust, technology readiness, regulation and government policy, organizational competence	(Al-Sharafi, Arshah, & Shanab, Factors Influencing the Continuous Use of Cloud Computing Services in Organization Level, 2017), (Alshamaila, Papagiannidis , & Li, 2013) (Amron, Ibrahim, Abu Bakar, & Chuprat, 2019) (Sharma, Gupta, & Acharya, 2021) (Cheng, Drivers of physicians' satisfaction and continuance intention toward the cloud-based hospital information system, 2020) (Ali, Shrestha, Osmanaj, & Muhammad, 2020) (Hamid & Yusof, 2015) (Mudawi, Beloff, & White, 2019), (Ming, On, Rayner, Guan, & Patricia, 2018), (Al-Sharafi, Arshah, & Shanab, Factors Influencing the Continuous Use of Cloud Computing Services in Organization Level, 2017) (Al-Sharafi, Arshah, & Shanab, Questionnaire Development Process to Measure the SMEs' Continuous Use behavior towards Cloud Computing Services, 2019) (Al-Sharafi, AlAjmi, Emran, Qasem, & Aldheleai, 2021) (Ming, On, Rayner, Guan, & Patricia, 2018) (Alshamaila, Papagiannidis , & Li, 2013) (Ifinedo, 2011) (Jere & Ngidi, 2020)	9
Environment	competitive pressure, cloud knowledge advantages, trading partner pressure, sector (industry), market scope, external support, regulation & government policy, government support	(Alshamaila, Papagiannidis , & Li, 2013) (Amron, Ibrahim, Abu Bakar, & Chuprat, 2019) (Sharma, Gupta, & Acharya, 2021) (Gangwar, 2017) (Fathey, Ibrahim, & Alzurqa, 2016) (Mudawi, Beloff, & White, 2019) (Al-Sharafi, Arshah, & Shanab, Factors Influencing the Continuous Use of Cloud Computing Services in Organization Level, 2017) (Al-Sharafi, Arshah, & Shanab, Questionnaire Development Process to Measure the SMEs' Continuous Use behavior towards Cloud Computing Services, 2019) (Ming, On, Rayner, Guan, & Patricia, 2018) (Alshamaila, Papagiannidis , & Li, 2013) (Ifinedo, 2011) (Jere & Ngidi, 2020)	8
Information system process	range of managerial capabilities, range of physical capabilities	(Anwar, Masrek, & Abdullah Sani, A Systematic Review on the Strategic Utilization of Information Systems and IT Infrastructure Flexibility, 2017) (Fink & Neumann, 2009) (Weill, Subramani, & Broadbent, 2002)	2
Competitive advantages	capability of R&D, product/service differentiation, cost leadership, growth advantages, quality of product, flexibility, delivery, pre-emption, future position, exploitation of market opportunities, neutralization of competitive threats, price, time to market, product innovation, fresh software, do more with less, always available, improve mobility, improve collaboration, reduced expenses, Niche advantages , value added, speed, agility, innovation, customer services, alliance, green computing, emerging application	(Anwar & Masrek, The Impact of IT Infrastructure Flexibility on Strategic Utilization on Information Systems: A Conceptual Framework, 2013) (Masrek, Jamaludin, & Hashim, 2009) (Anwar, Masrek, & Abdullah Sani, A Systematic Review on the Strategic Utilization of Information Systems and IT Infrastructure Flexibility, 2017) (Alzeaideen, 2020) (Salah, 2014) (Bamgbade, Mohd Nawi, Kamaruddeen, Adeleke, & Salimon, 2019) (Sigalas, Economou, & Georgopoulos, 2013) (Sukati, Abdul Hamid, Baharun, Alifiah, & Anuar, 2012) (Coles, 2015) (Porter M. E., 1985) (Awamleh & Ertugan, 2021) (Bilgihan, Okumus, Nusair, & Wuk Kwun, 2011) (Shirazi & Soroor, 2007) (Shayan, Azarnik, Chuprat, Karamizadeh, & Alizadeh, 2014) (Byrd & Turner, 2000) (Li, Nathan, Nathan, & Rao, 2006)	29

Perceived security and privacy	Perceived security and privacy	(Chang & Hsu, 2019) (Ratten, 2016) (Yuvaraj, 2016) (Akar & Mardikyan, 2016) (Senarathna, Wilkin, Warren, Yeoh, & Salzman, 2018) (Senyo, Addae, & Adam, 2015) (Fathey, Ibrahim, & Alzurqa, 2016) (Shin, 2013) (Lian, Yen, & Wang, 2014)	1
Attitude towards technology	attitude towards innovation,	(Cheng, Drivers of physicians' satisfaction and continuance intention toward the cloud-based hospital information system, 2020) (Ali, Shrestha, Osmanaj, & Muhammad, 2020) (Hamid & Yusof, 2015) (Mudawi, Beloff, & White, 2019) (Ming, On, Rayner, Guan, & Patricia, 2018), (Al-Sharafi, Arshah, & Shanab, Factors Influencing the Continuous Use of Cloud Computing Services in Organization Level, 2017) (Al-Sharafi, Arshah, & Shanab, Questionnaire Development Process to Measure the SMEs' Continuous Use behavior towards Cloud Computing Services, 2019) (Al-Sharafi, AlAjmi, Emran, Qasem, & Aldheleai, 2021) (Ming, On, Rayner, Guan, & Patricia, 2018) (Bamgbade, Mohd Nawi, Kamaruddeen, Adeleke, & Salimon, 2019) (Sigalas, Economou, & Georgopoulos, 2013) (Sukati, Abdul Hamid, Baharun, Alifiah, & Anuar, 2012) (Coles, 2015) (Porter M. E., 1985), (Awamleh & Ertugan, 2021) (Bilgihan, Okumus, Nusair, & Wuk Kwun, 2011) (Shirazi & Soroor, 2007) (Shayan, Azarnik, Chuprat, Karamizadeh, & Alizadeh, 2014) (Byrd & Turner, 2000) (Li, Nathan, Nathan, & Rao, 2006)	1
Security	security risks, security and trust, security and privacy	(Cheng, Drivers of physicians' satisfaction and continuance intention toward the cloud-based hospital information system, 2020) (Ali, Shrestha, Osmanaj, & Muhammad, 2020) (Hamid & Yusof, 2015) (Mudawi, Beloff, & White, 2019) (Ming, On, Rayner, Guan, & Patricia, 2018) (Al-Sharafi, Arshah, & Shanab, Factors Influencing the Continuous Use of Cloud Computing Services in Organization Level, 2017) (Al-Sharafi, Arshah, & Shanab, Questionnaire Development Process to Measure the SMEs' Continuous Use behavior towards Cloud Computing Services, 2019) (Al-Sharafi, AlAjmi, Emran, Qasem, & Aldheleai, 2021) (Ming, On, Rayner, Guan, & Patricia, 2018) (Bamgbade, Mohd Nawi, Kamaruddeen, Adeleke, & Salimon, 2019) (Sigalas, Economou, & Georgopoulos, 2013) (Sukati, Abdul Hamid, Baharun, Alifiah, & Anuar, 2012) (Coles, 2015) 2015), (Porter M. E., 1985), (Awamleh & Ertugan, 2021) (Bilgihan, Okumus, Nusair, & Wuk Kwun, 2011) (Shirazi & Soroor, 2007) (Shayan, Azarnik, Chuprat, Karamizadeh, & Alizadeh, 2014) (Byrd & Turner, 2000) (Li, Nathan, Nathan, & Rao, 2006) (Al-Sharafi, Arshah, & Shanab, Factors Influencing the Continuous Use of Cloud Computing Services in Organization Level, 2017) (Alshamaila, Papagiannidis , & Li, 2013) (Sallehudin, et al., 2021) (Sharma, Gupta, & Acharya, 2021), (Cheng, What drives cloud ERP continuance? An integrated view, 2018) (Cheng, Drivers of physicians' satisfaction and continuance intention toward the cloud-based hospital information system, 2020) (Can & Ercan, 2020)	4
Technology readiness	technology readiness, IT readiness	(Chang & Hsu, 2019) (Ratten, 2016) (Yuvaraj, 2016) (Akar & Mardikyan, 2016) (Senarathna, Wilkin, Warren, Yeoh, & Salzman, 2018) (Senyo, Addae, & Adam, 2015) (Fathey, Ibrahim, & Alzurqa, 2016) (Shin, 2013) (Lian, Yen, & Wang, 2014)	2

The researcher undertook a comprehensive review of 54 prior studies pertaining to the concept of competitive advantages. Based on the findings presented, it is evident that the existing body of research pertaining to competitive advantages predominantly focuses on the domains of technology, organisation, environment, and management as a mediating factor (primarily assessing managerial and physical capabilities), thereby highlighting the significance of these factors in determining competitive advantages.

Based on prior research, the researcher discovered numerous theories/ frameworks that can be utilized, including:

Table 5. Adoption of theory/framework used by previous scholars

Theory / Framework	References	References Count
TAM	(Behrend, Wiebe, London, & Johnson, 2011) (Aharony, 2014) (Sharma, Gupta, & Acharya, 2021) (Ali, Shrestha, Osmanaj, & Muhammad, 2020)	4
TOE	(Al-Sharafi, Arshah, & Shanab, Factors affecting the continuous use of cloud computing services from expert's perspective, 2017) (Alshamaila, Papagiannidis , & Li, 2013) (Sallehudin, et al., 2021) (Sharma, Gupta, & Acharya, 2021) (Cheng, What drives cloud ERP continuance? An integrated view, 2018) (Cheng, Drivers of physicians' satisfaction and continuance intention toward the cloud-based hospital information system, 2020) (Tehrani & Shirazi, 2014) (Can & Ercan, 2020) (Sallehudin, Razak, Ismail, Md Fadzli, & Baker, 2018) (Fathey, Ibrahim, & Alzurqa, 2016) (Mudawi, Beloff, & White, 2019) (Amron, Ibrahim, Abu Bakar, & Chuprat, 2019) (Sabi, Uzoka, Langmia, Njeh, & Tsuma, 2017) (Al-Sharafi, Arshah, & Shanab, Factors Influencing the Continuous Use of Cloud Computing Services in Organization Level, 2017) (Al-Sharafi, Arshah, & Shanab, Questionnaire Development Process to Measure the SMEs' Continuous Use behavior towards Cloud Computing Services, 2019) (Al-Sharafi, AlAjmi, Emran, Qasem, & Aldheleai, 2021) (Ming, On, Rayner, Guan, & Patricia, 2018) (Alshamaila, Papagiannidis , & Li, 2013) (Karkonasasi, Baharudin, Esparham, & Mousavi, 2016) (Ifinedo, 2011) (Jere & Ngidi, 2020) (Sulaiman & Magaireah, 2014) (Gutierrez, Boukrami, & Lumsden, 2015) (Chang & Hsu, 2019) (Nedev, 2014)	26
DOI	(Lin & Chen, 2012)	1
UTAUT	(Wu, Tao, & Yang, 2007) (Alsmadi & Prybutok, 2018)	2
IS continuance model	(Tan & Kim, 2011)	1
TAM - DTM	(Wu, Zhao, Zhu, & Zheng, 2011) (Wu & Chen, 2017)	2
TAM-RST	(Wu, Zhao, Zhu, & Zheng, 2011) (Wu & Chen, 2017)	2
TOE-ANT	(Saedi & Lahad, 2013)	1
TOE-DOI	(Chang & Hsu, 2019) (Mangula, Weerd, & Brinkkemper, 2014) (Marin, Oliveira-Dias, Navimipour, Gardas, & Unal, 2021) (Tehrani & Shirazi, 2014)	4
SCT	(Ratten, 2016)	1
ANT-TOE	(Alismaili, Li, Shen, & He, 2015)	1

The analysis of the data provided in Table 5 reveals that prior research focused on the investigation of competitive advantages have primarily utilised the Technology, Organisation, Environment (TOE) framework. The utilisation of the TOE framework has been observed in a total of 26 existing papers, which aim to investigate the various factors involved in achieving competitive advantages through the implementation of CCS.

4.2 Bibliometric Analysis

A total of 309 publications were found after the data was carefully analysed using the Publish or Perish application and then screened using the Mendeley Desktop application. The screening process focused

on looking at the competitive benefits of using CCS. Following this, a comprehensive evaluation procedure was undertaken, utilising the abstracts of the aforementioned papers. The study carefully curated and utilised a total of 200 papers.

The representation of bibliometric networks involves the utilization of symbols in the form of circles, which serve as visual representations of keywords or nodes. These nodes, in turn, are employed to depict the relationships between keywords within the network. This bibliometric network can assist in addressing this study's RO2: "To ascertain the current pattern of attaining competitive advantages through the utilisation of cloud computing services". The VOSviewer application assessed a total of 835 keywords with at least 1 occurrence. This analysis resulted in the identification of 2 clusters, as depicted in Figures 4 and 5.

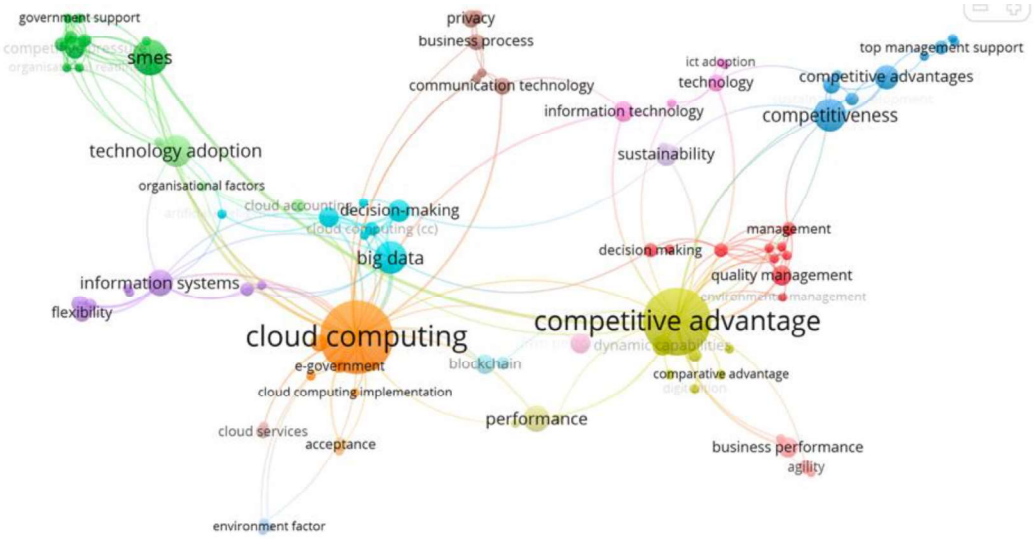

Figure 4. Network Analysis All

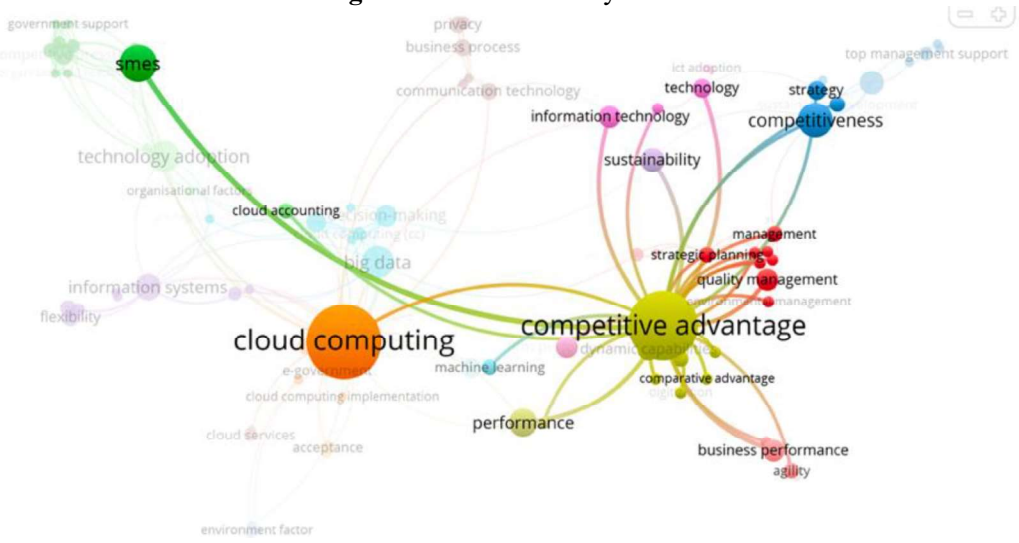

Figure 5. Network Analysis (correlation with competitive advantages)

Figure 4 presents a network visualization analysis of co-occurrence, which elucidates the relationship between a specific keyword and other keywords in the research. Each cluster represents discussion groups that researchers frequently engage in, focusing on competitive advantages that receive significant attention and are interconnected with other nodes in the network. The initial cluster is characterized by a light green colour and encompasses concepts such as competitiveness, sustainability, cloud computing, technology and performance. The second cluster, depicted in an orange colour, comprises phrases related to factors influencing cloud computing, information systems, performance, information technology, business processes, and acceptance. Figure 5 demonstrates that nodes with competitive advantages are interconnected with cloud computing and performance through a network of relationships.

The overlay visualization can present the most recent research trends, offering a comprehensive view of current subjects for discussion.

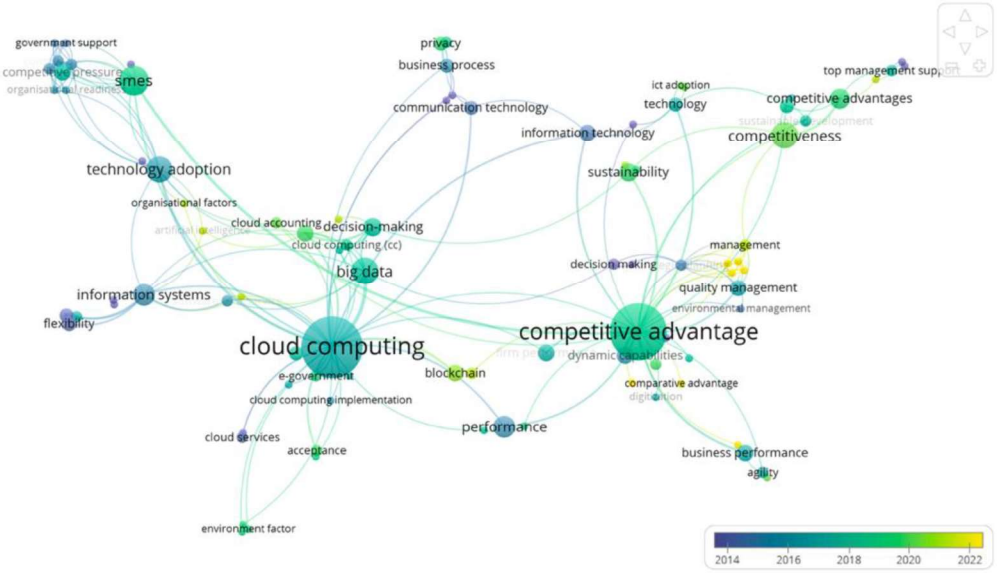

Figure 6. Overlay Visualization Trend

Figure 6 displays data on the distribution of research based on the year of publication. The lighter colour, denoted by the colours green and yellow, signifies that the research is more recent, implying that the research topic is still seen as viable. Recent years have seen a surge of interest in areas such as cloud computing acceptance, cloud computing implementation, sustainability, management, digital transformation, cloud services, and information systems.

Figure 7 shows the density visualization which highlights the prominence of research groups. Besides, it also displays issues such as competitive advantages, information systems, acceptance of cloud computing, competitive pressure, management and cloud computing with either light or bright hues. This further underscores the growing popularity of the topic, as evidenced by the expanding diameter, indicating a greater level of attention. Conversely, a diminished hue signifies that the subject matter is less favoured and is likely to attract less interest in the coming times. The density visualization results indicate that the topic of competitive advantages in cloud computing will garner increased attention due to its current prominence in discussions.

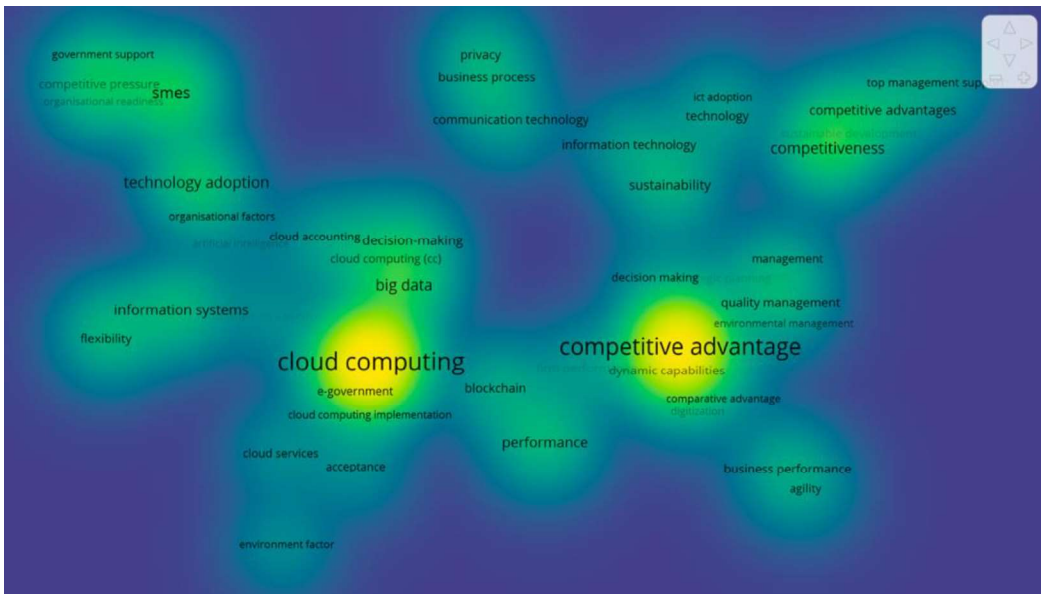

Figure 7. Density Visualization Trend

5. DISCUSSION AND CONCLUSION

The primary objective of this study is to investigate the factors that contribute to competitive advantages and determine contemporary trends in attaining competitive advantages through the utilization of CCS. A SLR and bibliometric analysis were employed to accomplish this goal.

When conducting a search on the topic of competitive advantages in relation to CCS, it is evident that a significant focus of previous scholarly work has focused on the acceptance of technology. When examining the acceptance of technology, researchers frequently employ various established models at the individual level. The models under consideration in this study are the Technology Acceptance Model (TAM), the Theory of Planned Behaviour (TPB), and the Unified Theory of Acceptance and Use of Technology (UTAUT). Nevertheless, the most intriguing aspect is the examination of the implementation of the TOE framework, as it has been duly recognized in a meticulous evaluation of 26 scholarly articles. However, the findings suggest that researchers would benefit from utilizing the TOE framework, as demonstrated by the incorporation of eight studies, to gain a more comprehensive comprehension of the competitive advantages that can be achieved through the implementation of CCS within organizations. Moreover, researchers have found that the implementation of the TOE framework at the organizational level leads to the attainment of optimal outcomes.

Through the utilisation of SLR techniques, the researcher conducted an in-depth analysis aimed at identifying the specific competitive advantages that can be derived from the utilisation of CCS. By using SLR, researchers were able to identify every dimension related to securing competitive advantages, as displayed in Table 6 (see Appendix).

A conceptual framework was developed by the researchers to assess the competitive advantages associated with the utilization of the CCS, as depicted in figure 7. This framework is based on a comprehensive analysis of the dimensions identified.

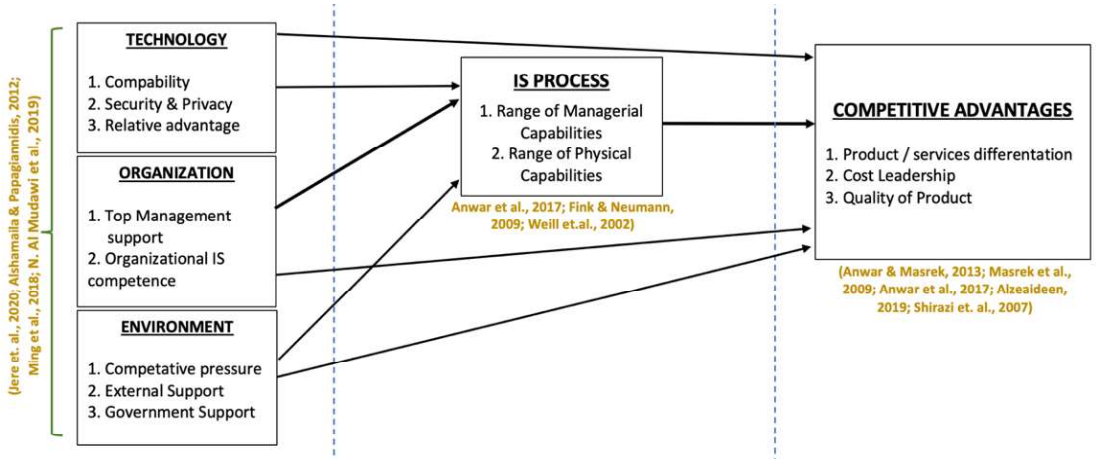

Figure 7. Conceptual framework

After conducting analysis, identification, and definition of variables and dimensions using SLR techniques, a theoretical framework was formulated. Then, the researcher conducted a bibliometric analysis by identifying research trends, determining the most researched fields as well as topics that appear the most in the field. The findings of the study found that a broader perspective is provided on how the use of CCS is shared and developed in the research community, which can help researchers gain a competitive advantage. However, just like any study, this research also has its own limitations. A notable limitation of this study is the relatively small sample size, consisting of only 54 papers from 309 sources. Furthermore, the chosen search term, "competitive advantage in using CCS," can be seen as having a limited focus.

This analysis provides insights to other studies which researchers out there can incorporate with different or additional keywords, potential areas and scopes of study. Thus, for future research in this field, it is advisable to carry out more comprehensive investigations by utilising a combination of the identified variables and incorporating diverse theories or frameworks to analyse associated matters in a more comprehensive manner. This could help identify, in more detailed perspective, factors that influence the continued use of CCS in achieving organisational competitiveness and measure the ongoing importance of securing a competitive advantage through CCS.

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References:

Abbott, B. (2024). Elsevier. Retrieved December 2024, from https://www.elsevier.com/

Aharony, N. (2014). Cloud computing: Information professionals' and educational technology experts' perspectives. *Library Hi Tech, 32*(4), 645-666.

Akar, E., & Mardikyan, S. (2016). Analyzing Factors Affecting the Adoption of Cloud Computing: A Case of Turkey. *KSII Transactions on Internet and Information Systems, 10*(1), 18-37.

Ali, O., Shrestha, A., Osmanaj, W., & Muhammad, S. (2020). Cloud computing technology adoption: an evaluation of key factors in local governments. *Information Technology & People, 34*(2), 666-703.

Alismaili, S., Li, M., Shen, J., & He, Q. (2015). A Multi Perspective Approach for Understanding the Determinants of Cloud Computing Adoption among Australian SMEs. *Australasian Conference on Information Systems* . Adelaide, Australia.

Alshamaila, Y., Papagiannidis , S., & Li, F. (2013). Cloud computing adoption by SMEs in the north east of England: A multi-perspective framework. *Journal of Enterprise Information Management, 26*(3), 250-275.

Al-Sharafi, M. A., AlAjmi, Q., Emran, M. A., Qasem, Y. A., & Aldheleai, Y. M. (2021). Cloud Computing Adoption in Higher Education: An Integrated Theoretical Model. In *Recent Advances in Technology Acceptance Models and Theories* (pp. 191-209). Springer.

Al-Sharafi, M. A., Arshah, R. A., & Shanab, E. A. (2017). Factors affecting the continuous use of cloud computing services from expert's perspective. *IEEE Region 10 International Conference TENCON*. Penang.

Al-Sharafi, M. A., Arshah, R. A., & Shanab, E. A. (2017). Factors Influencing the Continuous Use of Cloud Computing Services in Organization Level. *2017 International Conference on Advances in Image Processing* . ICAIP 2017. Bangkok, Thailand.

Al-Sharafi, M. A., Arshah, R. A., & Shanab, E. A. (2019). Questionnaire Development Process to Measure the SMEs' Continuous Use behavior towards Cloud Computing Services. *ICSCA '19: Proceedings of the 2019 8th International Conference on Software and Computer Applications*.

Alsmadi, D., & Prybutok, V. (2018). Sharing and storage behavior via cloud computing: Security and privacy in research and practice. *Computers in Human Behavior , 85*, 218-226.

Alzeaideen, K. (2020). Construction of Competitive Advantage Instrument in Jordanian SME Context Using Structural Equation Modelling . *International Journal of Financial Research, 11*(1).

Amron, M. T., Ibrahim, R., Abu Bakar, N. A., & Chuprat, S. (2019). Determining Factors Influencing the Acceptance of Cloud Computing Implementation. *Procedia Computer Science, 161*, 1055-1063.

Anwar, N., & Masrek, M. N. (2013). The Impact of IT Infrastructure Flexibility on Strategic Utilization on Information Systems: A Conceptual Framework. *2013 International Conference on Advanced Computer Science Applications and Technologies (ACSAT).* Kuching.

Anwar, N., Masrek, M. N., & Abdullah Sani, M. K. (2017). A Systematic Review on the Strategic Utilization of Information Systems and IT Infrastructure Flexibility. *Communications of the IBIMA, 2017.*

Armbrust, M., Fox, A., Griffith, R., Joseph, A. D., Katz, R. H., Konwinski, A., . . . Zaharia, M. (2009, February 10). Above the Clouds: A Berkeley View of Cloud Computing. Technical Report No. UCB/EECS-2009-28, pp. 1-23.

Arpaci, I. (2016). Understanding and predicting students' intention to use mobile cloud storage services. *Computers in Human Behavior, 58,* 150-157.

Awamleh, F., & Ertugan, A. (2021). The Relationship Between Information Technology Capabilities, Organizational Intelligence, and Competitive Advantage. *Sage Open, 11*(2).

Bamgbade, J. A., Mohd Nawi, M. N., Kamaruddeen, A. M., Adeleke, A. Q., & Salimon, M. G. (2019). Building sustainability in the construction industry through firm capabilities, technology and business innovativeness: empirical evidence from Malaysia. *International Journal of Construction Management.*

Behrend, T. S., Wiebe, E. N., London, J. E., & Johnson, E. C. (2011). Cloud computing adoption and usage in community colleges. Behaviour & Information Technology, 30(2).

Bilgihan, A., Okumus, F., Nusair, K. K., & Wuk Kwun, D. J. (2011). Information technology applications and competitive advantage in hotel companies. *Journal of Hospitality and Tourism Technology, 2*(2), 139-153.

Booth, A. (2016). Searching for qualitative research for inclusion in systematic reviews: a structured methodological review. Systematic Reviews.

Burnham, J. F. (2006). Scopus database: a review. *Biomedical Digital Libraries, 3*(1).

Buyya, R., Yeo, C. S., Venugopal, S., Broberg, J., & Brandic, I. (2009). Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility. *Future Generation Computer Systems, 25*(6), 599-616.

Byrd, T. A., & Turner, D. E. (2000). Measuring the Flexibility of Information Technology Infrastructure: Exploratory Analysis of a Construct. *Journal of Management Information Systems, 17*(1), 167-208.

Can, S., & Ercan, T. (2020). Understanding Determinants of Cloud Computing Adoption Using an Integrated Diffusion of Innovation (DOI)-Technological, Organizational and Environmental (TOE) Model. *Humanities & Social Sciences Reviews, 8*(1), 91-102.

Chae, J. (2018). Explaining Females' Envy Toward Social Media Influencers. *Media Psychology, 21(*2), 246-262.

Chang, Y. W., & Hsu, P. Y. (2019). An empirical investigation of organizations' switching intention to cloud enterprise resource planning: a cost-benefit perspective. *Information Development , 35*(2), 290-302.

Cheng, Y. M. (2018). What drives cloud ERP continuance? An integrated view. *Journal of Enterprise Information Management, 31*(5).

Cheng, Y. M. (2020). Drivers of physicians' satisfaction and continuance intention toward the cloud-based hospital information system. *Kybernetes, 50*(2), 413-442.

Coles, C. (2015). 11 Advantages of Cloud Computing and How Your Business Can Benefit From Them. Cloud Security Alliance. Retrieved from https://cloudsecurityalliance.org/

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research, 133*, 285-296.

Durach, C. F., Kembro, J., & Wieland, A. (2017). A New Paradigm for Systematic Literature Reviews in Supply Chain Management. *Journal of Supply Chain Management, 53*(4), 67-85.

Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2007, February 22). PubMed Advanced User Guide. (National Library of Medicine) Retrieved December 2024, from https://pubmed.ncbi.nlm.nih.gov/

Fathey, M., Ibrahim, O., & Alzurqa, E. (2016). Cloud computing adoption model for e-government implementation. *Information Development, 33*(3), 1-21.

Feak, C. B., & Swales, J. M. (2009). *Telling a Research Story Writing a Literature Review*. USA: University of Michigan Press.

Fink, L., & Neumann, S. (2009). Exploring the perceived business value of the flexibility enabled by information technology infrastructure. *Information & Management, 46*(2), 90-99.

Gangwar, H. (2017). Cloud computing usage and its effecton organizational performance. Human Syatem Management, 36(1), 13-26.

Gutierrez, A., Boukrami, E., & Lumsden, R. (2015). Technological, organisational and environmental factors influencing managers' decision to adopt cloud computing in the UK. *Journal of Enterprise InformationManagement, 28*(6), 788 - 807.

Hamid, H. A., & Yusof, M. M. (2015). State-of-the-art of cloud computing adoption in malaysia: A review . *Jurnal Teknologi, 77*(18), 131-136.

Ifinedo, P. (2011). Internet/e-business technologies acceptance in Canada's SMEs: an exploratory investigation. *Internet Research, 21*(3), 255-281.

Jere, J. N., & Ngidi, N. (2020). A technology, organisation and environmentframework analysis of information andcommunication technology adoption by smalland medium enterprises in Pietermaritzburg (5) (PDF) A technology, organisation and environment framework analysis of information an. *South African Journal of Information Management, 22*(1), 1-9.

Karkonasasi, K., Baharudin, A. S., Esparham, B., & Mousavi, S. A. (2016). Adoption of Cloud Computing among Enterprises in Malaysia. *Indian Journal of Science and Technology, 9*(48), 1-7.

Khan, K. I., Nasir, A., & Saleem, S. (2021, November 15). PubMed Central. (National Library of Medicine) Retrieved December 15, 2024, from https://pmc.ncbi.nlm.nih.gov/

Kianto, A., Vanhala, M., Ritala, P., & Hussinki, H. (2020). What drives the development of intellectual capital? A longitudinalstudy. In Intellectual Capital in the Digital Economy (pp. 1-17). Routledge.

Kilcioglu, C., & Rao, J. M. (2016). Competition on Price and Quality in Cloud Computing. WWW '16: Proceedings of the 25th International Conference on World Wide W. Montreal, Canada.

Kitchenham, B. (2004). *Procedures for Performing Systematic Reviews.* UK: Joint Technical Report.

Kovačević, A., Putnik, N., & Tošković, O. (2020). Factors Related to Cyber Security Behavior. *IEEE Access, 8*, 125140 - 125148.

Li, S., Nathan, B. R., Nathan, T. R., & Rao, S. S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega, 34*(2), 107-124.

Lian, J. W., Yen, D. C., & Wang, Y. T. (2014). An exploratory study to understand the critical factors affecting the decision to adopt cloud computing in Taiwan hospital. *International Journal of Information Management, 34*(1), 28-36.

Lin, A., & Chen, N. C. (2012). Cloud computing as an innovation: Percepetion, attitude, and adoption. *International Journal of Information Management, 32*(6), 533–540.

Liu, X., & Prybutok, V. R. (2021). An empirical investigation of factors that drive a user decision to continue using cloud storage services. *Journal of Decision Systems, 30*(1), 4-26.

Mangula, I., Weerd, I. V., & Brinkkemper, S. (2014). The adoption of software-as-a-service: An Indonesian case study. *Pacific Asia Conference on Information Systems (PACIS) 2014* . Chengdu, China.

Marin, J. M., Oliveira-Dias, D. D., Navimipour, N. J., Gardas, B., & Unal, M. (2021). Cloud computing and human resource management: systematic literature review and future research agenda. *Kybernetes, 51*(6), 2172-2191.

Masrek, M. N., Jamaludin, A., & Hashim, D. M. (2009). Determinants of Strategic Utilization of Information Systems: A Conceptual Framework. *Journal of Software, 4*(6), 591-598.

Meho, L. I., & Yang, K. (2007). Impact of data sources on citation counts and rankings of LIS faculty: Web of science versus scopus and google scholar. *Journal of the American Society for Information Science and Technology, 58*(13), 2105-2125.

Mell, P., & Grance, T. (2011). *The NIST Definition of Cloud Computing.* United State: National Institute of Standards and Technology.

Mengist, W., Soromessa, T., & Legese , G. (2020, February 1). PubMed Advances User Guide. Retrieved December 2024, from https://pubmed.ncbi.nlm.nih.gov/

Micheal, D. S. (2010). *The effect of simulation attributes on driver perception and behavior.* Montana State University.

Ming, C. F., On, C. K., Rayner, A., Guan, T. T., & Patricia, A. (2018). The Determinant Factors Affecting Cloud Computing Adoption by Small and Medium Enterprises (SMEs) in Sabah, Malaysia. *Journal of Telecommunication, Electronic and Computer Engineering (JTEC), 10*(3-2), 83-88.

Mirashe, S. P., & Kalyankar, D. V. (2010). Quality of Service with Bandwidth. *Journal of Computing, 2*(3), 73-77.

Moed, H. F. (2006*). Bibliometric Rankings of World Universities* . The Netherlands .

Mudawi, N. A., Beloff, N., & White, M. (2019). Cloud Computing in Government Organizations-Towards a New Comprehensive Model. 2019 IEEE SmartWorld, Ubiquitous Intelligence & Computing, Advanced & Trusted Computing, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovation (SmartWorld/SCALCOM/UIC/ATC/CBDCom/IOP/SCI).

Naveen, D., Satish, K., & Debidutta, P. (2020). Forty-five years of Journal of Business Research: A bibliometric analysis. *Journal of Business Research, 109*, 1-14.

Nedev, S. (2014). Exploring the factors influencing the adoption of Cloud computing and the challenges faced by the business. *Enquiry, 5*.

Nowicka, K. (2016). Cloud Computing in Sustainable Mobility. *Transportation Research Procedia, 14*, 4070-4079.

Petticrew, M., & Roberts, H. (2006). *Systematic Reviews in the Social Sciences: A Practical Guide.* USA: Blackwell Publishing.

Porter, M. E. (1985). Technology and Competitive Advantage. *Journal of Business Strategy, 5*(3), 60-78.

Porter, M. E. (1996). *What is strategy?* Harvard Business School Publishing.

Porter, M. E., & Millar, V. E. (2009). *Knowledge and Special Libraries*. London: Routledge.

Raj, A. (2023). Increasing adoption of cloud services in Malaysia. (Techwire Asia) Retrieved December 2024, from https://techwireasia.com/2023/07/increasing-adoption-of-cloud-services-in-malaysia/

Ratten, V. (2016). Continuance use intention of cloud computing: Innovativeness and creativity perspectives. *Journal of Business Research, 69*(5), 1737-1740.

Rittinghouse, J. W., & Ransome, J. F. (2016). *Cloud Computing Implementation, Management, and Security.* Boca Raton.

Sabi, H. M., Uzoka, F. M., Langmia, K., Njeh, F. N., & Tsuma, C. K. (2017). A cross-country model of contextual factors impacting cloud computing adoption at universities in sub-Saharan Africa. *Information Systems Frontiers A Journal of Research and Innovation, 20*, 1382-1404.

Saedi, A., & Lahad, N. (2013). An Integrated Theoretical Framework for Cloud Computing Adoption by Small and Medium-Sized Enterprises. *PACIS 2013 Proceedings , 79*, pp. 415-430. Jeju Island, Korea.

Sajovic, I., & Podgornik, B. B. (2022). Bibliometric Analysis of Visualizations in Computer Graphics: A Study. *Sage Journal, 12*(1).

Salah, K. (2014). Harnessing the cloud for teaching cybersecurity . SIGCSE '14: Proceedings of the 45th ACM technical symposium on Computer science education. Georgia.

Sallehudin, H., Mohd Aman, A. H., Razak, R. C., Ismail, M., Abu Bakar, N. A., Md Fadzli, A. F., & Baker, R. (2021). Performance and Key Factors of Cloud Computing Implementation in the Public Sector. *International Journal of Business and Society, 21*(1), 134-152.

Sallehudin, H., Razak, R. C., Ismail, M., Md Fadzli, A. F., & Baker, R. (2018). Cloud Computing Implementation in The Public Sector: Factors and Impact. *Asia-Pacific Journal of Information Technology and Multimedia, 7*(2-2), 27-42.

Senarathna, I., Wilkin, C., Warren, M., Yeoh, W., & Salzman, S. (2018). Factors That Influence Adoption of Cloud Computing: An Empirical Study of Australian SMEs . *Australasian Association for Information Systems, 22*, 1-31.

Senyo, P. K., Addae, E., & Adam, I. O. (2015). An overview of cloud computing adoption across industries in a developing country. Information Systems Educators Conference. Orlando, Florida.

Sharma, M., Gupta, R., & Acharya, P. (2021). Analysing the adoption of cloud computing service: a systematic literature review. *Global Knowledge, Memory and Communication, 70*(1/2), 114-153.

Shayan, J., Azarnik, A., Chuprat, S., Karamizadeh, S., & Alizadeh, M. (2014). *Identifying Benefits and risks associated with utilizing cloud computing.* Cornell University.

Shin, D. H. (2013). User centric cloud service model in public sectors: Policy implications of cloud services. *Government Information Quarterly, 30*(2), 194-203.

Shirazi, M. A., & Soroor, J. (2007). An intelligent agent-based architecture for strategic information system applications. *Knowledge-Based Systems, 20*(8), 726-735.

Sigalas, C., Economou, V. P., & Georgopoulos, N. B. (2013). Developing a measure of competitive advantage. Journal of Strategy and Management, 6(4), 320-342.

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research, 104*, 333-339.

Sukati, I., Abdul Hamid, A. B., Baharun, R., Alifiah, M. N., & Anuar, M. A. (2012). Competitive Advantage through Supply Chain Responsiveness and Supply Chain Integration. *International Journal of Business and Commerce, 1*(7), 1-11.

Sulaiman, H., & Magaireah, A. i. (2014). Factors affecting the adoption of integrated cloudbased e- health record in healthcare organizations: a case study of Jordan. *Proceedings of the 6th International Conference on Information Technology and Multimedia.* Putrajaya, Malaysia.

Tan, X., & Kim, Y. (2011). Cloud Computing for Education: A Case of Using Google Docs in MBA Group Projects. Business Computing and Global Informatization (BCGIN), 2011 International Conference on. Shanghai, China.

Tehrani, S. R., & Shirazi, F. (2014). Factors Influencing the Adoption of Cloud Computing by Small and Medium Size Enterprises (SMEs). *16th International Conference, HCI International 2014.* Greece.

Truong, D. (2010). How Cloud Computing Enhances Competitive Advantages: A Research Model for Small Businesses. Business Review, Cambridge, 15.

Turban, E., Sharda, R., Aronson, J. E., & King, D. (2008). *Business Intelligence: A Managerial Approach.* Pearson/Prentice Hall .

Twala, A., & Kekwaletswe, R. (2019). Strategic Cloud Computing Framework: South African Context. *Proceedings of 4th International Conference on the Internet, Cyber Security and Information Systems.*

Wang, N., Liang, H., Jia, Y., Ge, S., Xue, Y., & Wang, Z. (2016). Cloud Computing Research in the IS Discipline: A Citation/CoCitation Analysis. *Decision Support Systems, 86*, 35-47.

Weill, P. D., Subramani, M. R., & Broadbent, M. (2002). Building IT Infrastructure for Strategic Agility. MIT Sloan Management Review, pp. 57-65.

Wu, B., & Chen, X. (2017). Continuance intention to use MOOCs: Integrating the technology acceptance model (TAM) and task technology fit (TTF) model . *Computers in Human Behavior , 67*, 221-232.

Wu, K., Zhao, Y., Zhu, Q., & Zheng, H. (2011). A meta-analysis of the impact of trust on technology acceptance model: Investigation of moderating influence of subject and context type. *International Journal of Information Management, 31*(6), 572-581.

Wu, Y.-L., Tao, Y.-H., & Yang, P.-C. (2007). Using UTAUT to explore the behavior of 3G mobile communication users. *2007 IEEE International Conference on Industrial Engineering and Engineering Management*. Singapore.

Xiao, Y., & Watson, M. (2017). Guidance on Conducting a Systematic Literature Review. *Journal of Planning Education and Research, 39*(1).

Younas, M., Abang Jawawi, D. N., Kamil, A. M., Ahmad, M. N., Sarwar, M. U., & Idris, M. Y. (2019). Agile Software Development Using Cloud Computing: A Case Study. *IEEE Access, 8*, 4475 - 4484.

Yuvaraj, M. (2016). Determining factors for the adoption of cloud computing in developing countries: A case study of Indian academic libraries. *The Bottom Line, 29*(4), 259-272.

Zhang, Q., Cheng, L., & Boutaba, R. (2010). Cloud computing: state-of-the-art and research challenges. *Journal of Internet Services and Applications, 1*, 7-18.

Zulkifli, M. S., & Abas, H. (2022). A Systematic Literature Review : Challenges of Cloud Computing Adoption for Small Medium Business in Malaysia. *Open International Journal of Informatics (OIJI) special session on RATIPS 2022, 10*(1).

Appendix

Table 3. The result from the process of converting RO to search keywords by iteration

No.	Online Database	Interation																					TOTAL		
		1						2									3								
		Cloud Computing Services			Influencing factor on continue used of CCS			Measuring the cloud computing services competitive advantages			MSC status company competitive advantages in cloud computing			Strategic use of cloud computing			Competitive Advantages and firm performance			Measuring the competitive advantages					
		Studies Found	Appropriate Studies	Suitable Studies	Studies Found	Appropriate Studies	Suitable Studies	Studies Found	Appropriate Studies	Suitable Studies	Studies Found	Appropriate Studies	Suitable Studies	Studies Found	Appropriate Studies	Suitable Studies	Studies Found	Appropriate Studies	Suitable Studies	Studies Found	Appropriate Studies	Suitable Studies	Studies Found	Appropriate Studies	Suitable Studies
1	Academia (https://www.academia.edu/)	9	4	2	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1	0	0	0	11	6	4
2	ACM Digital Library (https://dl.acm.org/)	4	1	0	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	6	2	1
3	CiteseerX (https://citeseerx.ist.psu.edu)	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
4	EBSCOhost (http://search.ebscohost.com/)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
5	Emerald Insight (https://www.emerald.com/insight/)	11	1	1	1	0	0	0	0	0	0	0	0	0	0	0	13	8	7	0	0	0	25	9	8
6	Google (https://www.google.com.my/)	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	1	0	0	0	0	5	2	0
7	Google Scholar (https://scholar.google.com)	11	4	3	0	0	0	1	1	1	0	0	0	0	0	0	2	2	2	0	0	0	14	7	6
8	IEEExplorer (https://www.ieeexplore.ieee.org)	7	2	2	1	1	1	0	0	0	0	0	0	0	0	0	5	2	1	0	0	0	13	5	4
9	Proquest (https://www.proquest.com/)	4	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	6	1	1
10	ResearchGate (https://www.researchgate.net)	14	10	4	2	1	1	1	1	1	3	2	0	2	2	2	12	11	10	2	2	2	36	29	20
11	Science Direct (https://www.sciencedirect.com/)	49	2	1	1	1	1	0	0	0	1	0	0	0	0	0	117	0	0	0	0	0	168	3	2
12	Springer (https://www.springer.com/gp)	8	4	3	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	0	0	11	5	4
13	Taylor & Francis online (https://www.tandfonline.com/)	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	0	0	6	4	2
14	Wiley Online Library (https://onlinelibrary.wiley.com/)	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1
TOTAL		130	33	18	6	4	4	5	4	4	4	2	0	2	2	2	160	27	23	2	2	2	309	74	53

Table 6. The summary of dimensions for the Dependent Variable (DV), Mediating Variable (MV) and Independent Variable (IV)

REFERENCES	INDEPENDENT VARIABLE							MEDIATING VARIABLE		DEPENDENT VARIABLE			
	TECHNOLOGY			ORGANIZATION		ENVIRONMENT		IS PROCESS		COMPETITIVE ADVANTAGES OF USING CCS			
	Compatibility	Security & Privacy Concern	Relative advantages	Top Management Support	Organizational IT Competence	Competitive pressure	External support / Supplier Computing support	Government Support	Range of Managerial Capabilities	Range of Physical Capabilities	Product / service differentation	Cost leadership	Growth Advantages	Quality of product
Amron et al., 2019	1		1	1			1	1				1	1	
Al-Sharafi, 2017	1	1	1	1		1		1						
Al-Sharafi, 2019	1	1	1	1		1		1						
Yazn Alshamaila & Sawvas Papagiannidis, 2012	1		1	1		1	1							
Alshamaila, Papagiannidis, & Li, 2013	1		1	1		1	1							
Karkonasasi et al., 2016				1										
Anwar et al., 2017									1	1	1	1	1	
Lior Fink, Seev Neumann, 2009									1	1				
Weill, Peter & Subramani, Mani & Broadbent, Marianne, 2002									1	1				
Anwar & Masrek, 2013											1	1	1	
Masrek et al., 2009											1	1	1	
Alzeaideen, 2019											1	1		1
Shirazi, M. A., & Soroor, J., 2007											1	1	1	
Ifinedo, Princely (2011)			1		1	1	1							
Mohammed et al., 2018	1	1	1											
N. Al Mudawi et al., 2019	1	1	1	1										
Jere, JN & Ngidi, N., (2020)	1		1	1	1	1	1	1						

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