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Exploring Competitive Advantage by Utilizing Cloud Computing Services (CCS)

Sazlin Ahmad Taufek[1], Norizan Anwar[1], Safawi Abdul Rahman[1], Yohannes Kurniawan[2]

[1]*Faculty of Information Science, Universiti Teknologi MARA, Puncak Perdana Campus, UiTM Selangor, Shah Alam, Selangor, Malaysia*

[2]*School of Information Systems, Bina Nusantara University, Jakarta, Indonesia*

Corresponding author's e-mail address: norizan8027@uitm.edu.my

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ABSTRACT

In today's digital economy, competitive advantage is essential for the success and sustainability of organizations. Organizations that use cloud computing services (CCS) can improve operational efficiency, reduce expenses and increase scalability in addition to promoting innovation and resource utilization. The ability to optimize processes and respond to changing market demands allows businesses to maintain profitability and ensure customer satisfaction. CCS is important for Malaysian Digital (MD) status companies, facilitating alignment with the country's digital transformation agenda, enhancing operational capabilities, and establishing these organizations as leaders in the ASEAN digital economy. Challenges including internet dependency, data security risks and significant upfront investment requirements must be addressed through the establishment of robust digital infrastructure, advanced cyber security frameworks and targeted financial support, especially for smaller enterprises. Policymakers should support these measures to guarantee equitable access to CCS and encourage innovation across multiple sectors. CCS provides a strategic approach to increase long-term competitiveness and innovation, emphasizing its important role in adapting to a rapidly digitizing global economy.

INTRODUCTION

In the contemporary global economy, competitive advantage is very important for organizations to maintain their success and adapt to changing market dynamics. Competitive advantage refers to the unique advantage that an organization achieves by offering products or services that are considered superior to competitors, either through cost leadership, differentiation, or a combination of the two strategies (Porter, 1985). There are also some researchers who assert that every organization strives to achieve a competitive

advantage in the industry in which they operate (Wetherbe, McLean, E.R, Leidner, & Turban, 2006). Competitive advantage is the driving force behind the success or failure of a company such an advantage aims to lead to market control and significantly higher than average profits (Porter, 1985; Porter M. E., What is strategy?, 1996). These distinct advantages enable organizations to outperform competitors, secure market dominance and maintain long-term profitability. Achieving competitive advantage requires effective use of resources, delivering superior value to customers, and implementing strategies that are difficult for competitors to imitate, thus ensuring sustainability (Barney J. , 1991).

In recent years, cloud computing services (CCS) have emerged as a transformative technology, fundamentally reshaping the way organizations operate. Cloud computing is a model for delivering IT services over the internet, where the underlying hardware and software resources are owned and managed by a third-party service provider (Frankenfield, 2023). CCS provides scalable on-demand access to digital infrastructure, platforms and software, enabling organizations to improve operational efficiency, foster innovation and respond rapidly to evolving market demands.

Cloud computing is one factor that contributes to a change in business operations, which ultimately results in a competitive advantage (Chen, Chen, & Chang, 2017). To begin, CCS enables businesses to reduce their IT investments by supplying computing power on demand, which enables quick implementation, low maintenance, a smaller number of IT staff members, and a lower overall cost for their information technology. Second, CCS improves the scalability and flexibility of information systems by pooling together a large number of information technology resources (Zhang, Cheng, & Boutaba, 2010). Third, information systems are made more accessible thanks to cloud computing (Zissis & Lekkas, 2012). Users are able to connect to the systems using a variety of platforms, such as laptops and touchpads, and they can access the systems via the internet from any location in the world. Finally, cloud computing can help lower the risks associated with running a business (Zhang, Cheng, & Boutaba, 2010).The use of CCS offers a distinct opportunity to achieve competitive advantage by supporting cost reduction, enabling product differentiation, and improving service quality. By leveraging these capabilities, organizations can optimize the use of resources, accelerate innovation, and create value for stakeholders, thus strengthening their competitive position in the market (Zhang, Cheng, & Boutaba, 2010).The MD status company is an organization recognized under the Digital Malaysia initiative, a program rebranded in 2022 from the Malaysian Multimedia Corridor (MSC). The initiative seeks to enhance the development of Malaysia's digital economy through the promotion of innovation, the encouragement of advanced technology adoption, and the establishment of a competitive global digital ecosystem. The Malaysia Digital Economy Corporation (MDEC) manages MD companies, which benefit from tax incentives, grants, and access to digital infrastructure to facilitate their digital transformation efforts (Abdullah & Hanafi, 2021). These companies are essential in advancing Malaysia's goal to establish itself as a prominent digital hub within the ASEAN region, significantly contributing to national economic growth and competitiveness (Anuar, Sadek, & Ahmad Khan, 2022).

Recent studies on achieving competitive advantage often emphasize the role of digital transformation and innovative technologies such as CCS. This technology enables organizations to streamline operations, improve customer experience and gain insights to make strategic decisions (Demirkan & Delen, 2013). By embracing digital transformation, organizations can stay ahead of the competition and adapt to today's rapidly changing market demands. While these studies broadly explore the potential of CCS in increasing operational efficiency, driving innovation and reducing costs, focused investigations into how CCS specifically enables competitive advantage are still limited (Battleson, West, Kim, Ramesh, & Robinson, 2016). The literature review reveals a lack of comprehensive research examining CCS in the context of achieving competitive advantage through strategies such as cost leadership, differentiation and quality improvement, especially in a specific industry or national context.

In Malaysia, where the government is now actively promoting digital transformation through initiatives such as the MyDIGITAL action plan and the Malaysian Digital Economy Corporation (MDEC), the role and function of CCS in fostering competitive advantage among Malaysia Digital (MD) status companies is less explored. Although the use of CCS is seen to be increasing, there is limited scholarly attention on how this technology contributes to long-term competitiveness and innovation in Malaysia's digital economy. This research aims to address this gap by investigating how CCS can be used to achieve and sustain competitive advantage, offering insights into its strategic importance for MD status companies and the wider digital transformation landscape in Malaysia. The findings from this research will contribute to the understanding of the role of CCS in driving innovation in Malaysia's digital economy.

LITERATURE REVIEW

Previous Study on Competitive Advantages Toward CCS

Five forces of competitive advantage and three strategies for achieving it when it comes to the use of CCS as a competitive strategy (Porter, 1985) . This strategy is used in areas such as green innovation, manufacturing, small and medium-sized enterprises (SMEs), information technology (IT), logistics, the electric utility industry, and the banking industry. In any given industry, the five major forces can either jeopardies or strengthen a company's position. The five forces are (1) the threat of new competitors entering the market, (2) the bargaining power of suppliers, (3) the bargaining power of customers or buyers, (4) the threat of product or service substitution, and (5) rivalry among existing firms in the industry (Porter, 1985). The table below shows the results of a studied that been conducted on competitive advantages for cloud computing services to counteract the five forces of competition.

Organizations that adopt cloud computing services report a wide range of performance gains (Aral & Weill, 2007). These gains come from economic, technical, and strategic fronts, and organizations that complement the use of cloud computing with a set of other capabilities experience higher returns. The study was based on qualitative research with CIOs and senior IT managers, and it highlights the potential benefits that organizations can gain from cloud computing adoption.

Organizations can gain from CCS in a variety of ways, including as cost savings, scalability, improved productivity, and more. CCS is one of the essential tools for digital transformation since it enables online storage of data such as files, applications, and servers and it also allowing access from any internet-connected device (Sydle, 2022). This means that CCS helps organizations move towards a digital environment by storing and managing data online, which can be accessed from anywhere with an internet connection. This allows for greater flexibility and accessibility for organizations, which can result in improved efficiency and productivity. Digital transformation refers to the integration of digital technology into all areas of a business, leading to fundamental changes to how the business operates and delivers value to customers. By utilizing CCS, organizations can play a significant role in the process of digital transformation, leveraging technology to drive innovation and growth. Organizations can use CCS to lower the expense of maintaining on-premises infrastructure while utilising the scalability and flexibility of the cloud to suit their changing business needs and adapt to new technologies. By allowing workers to view and share data and files remotely, CCS can also enhance cooperation and communication inside an organization, which can boost productivity and efficiency.

CCS provide numerous benefits to organisations (Sydle, 2022). CCS enables the storage of files, applications, and servers online for access from any internet-connected device. There is certain researcher unequivocally stated that CCS is one of the primary resources of digital transformation (Sydle, 2022). There are approximately 12 benefits to using CCS, such as cost reduction, security, flexibility, mobility, data storage using integrated analysis tools, collaboration, quality control by keeping all data centralised and

under the same standards allows for more transparent records and smoother auditing, disaster recovery, information in the cloud is less vulnerable, as it is stored in a structure with significantly more resources. CCS also offer increased efficiency, improved collaboration and communication, increased scalability and accessibility, and the ability to focus on core business activities while outsourcing non-core tasks (Sydle, 2022). The CCS can help organizations respond to changing business needs quickly and effectively, and it provides a platform for innovation by enabling the use of new technologies and solutions. The use of CCS can also provide organizations with greater control over their data and IT systems, as well as better visibility and insight into their operations and performance. Besides, table below summarizes the objectives, study methodology, and primary findings about the competitive advantages offered by other researchers.

***Table 1**: Previous study about competitive advantages.*

Authors	Objectives	Research Method	Main Finding
Anwar & Masrek, (2013)	This paper proposed a framework that links the former and the latter considering the paucity of studies examining the impact of flexible information technology infrastructure on the strategic use of information systems.	Conceptual Framework	Introduced variables / dimensions of competitive advantage, such Product Differentiation Cost leadership Growth advantages
Marek et al. (2009)	This paper aims to provide a conceptual understanding of the impact of organisational, technological, and environmental factors on the strategic use of information systems as measured by product differentiation, cost leadership, and growth advantage.	Conceptual framework	Introduced variables / dimensions of competitive advantage, such Product Differentiation Cost leadership Growth advantages
Anwar et al. (2017)	This study tries to pinpoint the factors that influence the strategic use of information systems.	Systematic literature review	Introduced variables / dimensions of competitive advantage, such Product Differentiation Cost leadership Growth advantages
Alzeaideen (2019)	The goal of this study is to investigate and determine the dimensionality of the items used to measure competitive advantages.	Quantitative	Introduced variables / dimensions of competitive advantage, such Product differentiation Cost leadership Quality of product
Shirazi, M. A., & Soroor, J. (2007)	To investigate the fundamental issues of intelligent agent technology, multi-agent systems, strategic information systems, and intelligent agent-based SIS.	Content analysis	Introduced variables / dimensions of competitive advantage, such Product Differentiation Cost leadership Growth advantages
King & Sabherwal, (1992)	To examine the key characteristics of strategic IS applications To investigates the relationship with contextual factors representing the industry environment, the organization structure, and the IS function	Quantitative	• Information systems applications primarily contribute to functions involving customers or competitors, primarily to reduce costs or provide some differentiation. • There was little impact on suppliers. The impact on

			suppliers, however, is greater in decentralised organisations and in heterogeneous environments. Introduced variables/dimension of strategic advantage, such Product Differentiation Cost leadership Growth Advantage Alliance Advantage Innovations
Makido et al. (2003)	To examine the connection between IT and competitiveness	Quantitative	IT as a tool for forming voluntary alliances between firms that supply strategic components IT as a tool for finding low-cost suppliers or making spot market contracts To compete in global markets, manufacturers must pursue a strategy that combines IT empowerment and strategic alliance strategies rather than a stand-alone strategy.
Truong (2010)	The objective of this study is to create a cloud computing research model from a managerial standpoint, with a focus on small businesses.	Content analysis	By applying the resource-based view to IS in the context of cloud computing, we can argue that cloud computing resources can only create and keep a competitive advantage by working with other important business resources like innovation and collaboration. Also, some moderators will have an effect on the link between resources and competitive advantage.
Bhattarai (2021)	On top of cloud security, cloud governance framework, and generic cloud advantages, this study attempted to incorporate a competitive advantage and added value perspective.	Quantitative	Introduced variables / dimensions of competitive advantage, such Growth Stability Retrenchment Re-invention

Competitive Advantages Toward CCS

CCS has emerged as an important component in gaining competitive advantage for organizations through three key dimensions: product differentiation, cost leadership and product quality. These aspects allow organizations to differentiate themselves in the market, acquire customers, and maintain profitability (Banker, Mashruwala, & Tripathy, 2014). By using CCS properly, organizations can strategically increase their competitive advantage and ensure lasting success.

Product or service differentiation refers to the strategy employed by an organization to provide a comparable product or service that is already present in the market, but at a reduced cost, while maintaining

superior quality compared to the existing alternatives. By implementing CCS, organizations can efficiently manufacture both new and existing products or services while maintaining superior quality and minimizing expenses (Gupta, Gupta, & Shankar, 2021). CCS is an invaluable tool for organizations to augment their competitive advantage (Azeem, Ahmed, Haider, & Sajjad, 2021). Through the formulation of efficient strategies, organizations can devise products or services that not only cater to customer demands but also distinguish themselves from rivals. Implementing CCS can enhance efficiency and production, resulting in enhanced overall market performance (Gangwar, 2017). By employing this strategic strategy, organizations can effectively adjust to shifting market conditions and maintain an edge over their competitors. Therefore, the product or service differentiation occurs when an organisation is able to supply the same product or service that is available on the market but at a lower price with the best quality in comparison to those that are already available on the market. The usage of CCS in an organisation makes it possible for that organisation to manufacture both new and existing goods or services to their consumers with quality and at less rates than the savings that can be made using the CCS. CCS can also be used by business organisations in order to compete with other business organisations by establishing strategies to create goods or services that actually suit the demands of customers or that are distinct from those of their competitors.

The cost leadership strategy, as conceptualized by Michael Porter in 1985, is a prominent component of his Generic Strategies framework. This strategy holds the potential for application across diverse product and service offerings, spanning various sectors and organizations of varying scales. Organizations that embrace a cost leadership strategy typically prioritize the management of costs, optimization of operations, and attainment of economies of scale to curtail production costs. This enables them to provide products or services at a more affordable price compared to their rivals. In addition, it is worth noting that organizations with substantial purchasing power have the potential to engage in negotiations with suppliers and vendors, resulting in the possibility of obtaining lower prices. This, in turn, can contribute to the reduction of production costs and facilitate the ability to provide products or services at a more competitive price point. As we know that the cost leadership strategy is one of Michael Porter's Generic Strategies, and it can be applied to all products and services, sectors, and organizations of any size. This can be achieved through a variety of means such as economies of scale, efficient production processes, lower labor costs, and more. Organizations that adopt a cost leadership strategy often focus on controlling costs, streamlining operations, and achieving economies of scale to reduce production costs, which allows them to offer products or services at a lower price point than their competitors. Additionally, an organization may also use its large purchasing power to negotiate lower prices from suppliers and vendors, which can also help to lower production costs and enable them to offer products or services at a lower price point.

Product quality is an important determinant of customer satisfaction and loyalty. By consistently delivering high quality products, an organization can build a strong reputation and differentiate themselves from competitors (Gebauer, Gustafsson, & Witell, 2011). Investing in quality control measures and continuous improvement processes can help ensure customers receive a reliable and superior product. CCS can improve product quality for an organization by enabling real-time data processing, seamless updates and robust performance (Umar & Rana, 2024). For MD companies, ensuring reliability and superior functionality through CCS strengthens customer trust and strengthens their reputation in a competitive market. Quality is essential for gaining a competitive advantage in an organisation. This is because quality can increase customer satisfaction and profit per item sold. Lower price offers, high-quality product releases, and effective marketing campaigns have little impact on growth if product quality falls short of expectations. Consistent execution through great investment is the key to exceeding expectations. Only when firms are prepared to accept change and commit to making continuous improvement a priority in their important manufacturing processes can quality become a competitive advantage.

LIMITATIONS AND RECOMMENDATIONS

Although CCS has the potential to provide competitive advantage, several limitations need consideration. A primary disadvantage is the dependence on internet access, which might create difficulties in regions with inadequate network infrastructure or during unexpected downtime. This dependence may hinder operations, lead to diminished productivity, or decrease customer satisfaction. Moreover, data security and privacy issues are essential, since organisations often must disclose sensitive information to third-party suppliers. Being vulnerable to cyber-attacks or data breaches could destroy confidence and result in legal or regulatory consequences, especially in regulated businesses. Moreover, whereas CCS provides scalability, migrating to a cloud infrastructure may require substantial initial investment and technical proficiency, presenting obstacles for smaller organisations with constrained resources. Organisations must have a robust, multifaceted cybersecurity plan to protect sensitive data and guarantee compliance to industry-specific and legislative standards. Working with highly reliable cloud providers that offer high security standards and service-level agreements can reduce risk . Moreover, investing in backup systems and hybrid cloud solutions could increase resilience to internet problems. To optimise the advantages of CCS, organisations must do a comprehensive cost-benefit analysis and customise implementation to their specific requirements, guaranteeing resource efficiency. Policymakers and business leaders in Malaysia should promote programs that enhance internet infrastructure, provide financial or technical assistance to smaller organisations, ensure equal access to CCS, and stimulate innovation across all organisational sizes.

DISCUSSION AND CONCLUSION

The findings of this study underscore the transformative potential of CCS in achieving competitive advantage through cost leadership, product differentiation, and enhanced product quality. CCS enables organizations to optimize operations, reduce costs and increase scalability while fostering innovation and efficiency. By using CCS, organizations can streamline processes, improve resource allocation, and ultimately gain a competitive advantage in the marketplace. Furthermore, the scalability and flexibility offered by CCS allows businesses to adapt quickly to changing market conditions and customer demands. This can result in better customer satisfaction and increased market share for organizations that use cloud computing services. By leveraging CCS, organizations can adapt to evolving market dynamics, improve customer satisfaction and maintain profitability in the long term. However, challenges such as internet dependency, data security and the initial investment required for cloud deployment must be strategically addressed. Policymakers and business leaders should prioritize improving digital infrastructure, foster robust cybersecurity frameworks, and provide financial and technical support to smaller organizations to ensure equitable access to CCS. In conclusion, CCS presents a strategic opportunity for organizations to gain and maintain a competitive advantage in a rapidly digitizing economy, provided its implementation is guided by a thorough understanding of its benefits, limitations and alignment with organizational goals.

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