

Everyone's Smart University

Master of Project Management



The Impact of Cloud Services on the Quality of Work Performance in the Real Estate

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The Impact of Cloud Services on the Quality of Work Performance in the Real Estate
Sector of Riyadh, Saudi Arabia

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**Topic: The Impact of Cloud Services on the Quality of Work Performance in the
Real Estate Sector of Riyadh, Saudi Arabia**

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ABSTRACT

This research work aimed to find the impact of Cloud Services on the Quality of Work Performance in the Real Estate Sector of Riyadh, Saudi Arabia. This research work is based on a quantitative approach and follows the descriptive research design. This research employed primary data analysis, and the data collection method was an online survey. A self-constructed questionnaire was used to collect data from the target population, following a broad review of the relevant literature. The collected data was examined using statistical software such as SPSS and MS Excel. SPSS, in the form of statistical packages, was used for data analysis, employing multiple techniques. The outcomes of this research work indicated that the value of the p of independent variable cloud services adoption is less than 0.05, which shows 95% of acceptance of the alternative hypothesis of the research study, and it also represents an increase in cloud services adoption increases the quality of work performance in the real estate sector. The p-value of cloud services adoption is 0.803, which shows that cloud services adoption is positively correlated and has a positive effect on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia. This research study is limited to the real estate sector in Riyadh, Saudi Arabia; therefore, the results may not be generalizable to other regions or sectors, and this study suggested that real estate companies in Riyadh businesses may boost their decision-making capabilities, customer service, and overall competitiveness by taking use of cloud computing's benefits, such as greater efficiency, data accessibility, and better collaboration.

Keywords

Cloud Services, Real-estate, and Quality of work performance.

CHAPTER I

INTRODUCTION

1.1 Background

Cloud services have been rapidly transforming the way businesses operate and collaborate in workplace settings. The increased adoption of cloud services is due to their numerous advantages over traditional on-premises solutions because these services offer scalability, flexibility, cost-effectiveness, and accessibility from anywhere, making them an ideal solution for businesses of all sizes (Musamali & Muchelule, 2022). With the increasing need for remote work and collaboration, cloud services are becoming even more crucial in today's workplace environment; with cloud services, employees can easily access files and collaborate on projects from any location with an internet connection, and this has made it possible for businesses to adopt remote work models and increase productivity. Cloud services also provide a scalable solution for businesses, enabling them to easily expand or downsize their operations as needed (Dincă et al., 2019).

In the last several years, cloud technology has emerged as a game-changer, delivering advantages that have never been seen before and so revolutionising the manner in which enterprises operate. The influence of cloud technology is particularly obvious in the improvement of the overall job quality across a variety of sectors (Vasiljeva et al., 2017). The advent of cloud computing has paved the way for improved work quality as well as increased productivity. This has been made possible by the simplification of workflows, the expansion of accessibility, the encouragement of partnership, the strengthening of security, and the provision of cost-effective scalability. In the following paragraphs, we will investigate the ways in which cloud technology may help to enhance the quality of work in more depth (Rittinghouse & Ransome, 2016).

The standardisation of procedures made possible by cloud computing helps businesses to reduce the complexity of their workflows and enhance the quality of their output as a whole. Cloud-based solutions have the ability to automate repetitive processes, therefore minimising the likelihood of workers making mistakes and freeing them up to concentrate on more important and high-value work. This not only results in savings of time and money but also results in the development of products of superior quality (Oredo & Dennehy, 2022). In addition, cloud services provide a seamless interaction with a variety of third-party tools and apps, making it possible for enterprises to tailor their workflows to meet the specific needs of their operations. Cloud technology enables businesses to improve their output while simultaneously boosting their productivity, and this is accomplished by automating routine processes and streamlining workflows (Ooi et al., 2018).

Second, the increased availability of resources, data, and applications made possible by cloud computing contributes to an overall improvement in the quality of the job. Now that information can be accessed from any location and at any time, workers are able to do their tasks from a distance without negatively impacting their productivity. This flexibility makes it easier for workers to maintain a healthy work-life balance and gives them the ability to complete tasks whenever it is most convenient for them, both of which contribute to increased job satisfaction and motivation (Murad et al., 2022). In addition, enhanced accessibility means that the appropriate information is accessible to the appropriate individuals at the appropriate time, which encourages the making of well-informed decisions and enables organisations to respond in a way that is both more prompt and more effective (LAKHWANI et al., 2020).

Cloud computing has also had a substantial positive impact on the quality of interaction, which is another facet of job quality. Cloud-based solutions provide a number of important benefits, one of the most important being the ability to collaborate in real-time regardless of where individuals are physically located. Programs like Google Workspace and Microsoft Office 365 provide workers with the ability to concurrently

edit documents, spreadsheets, and presentations. This improves both communication and the ability to work together. The elimination of barriers between members of a team is made possible by cloud computing, which paves the way for a more productive flow of ideas and information (Khayer et al., 2020). This, in turn, results in improved work quality and the development of novel approaches (Kerravala & Michels, 2015).

Data security has emerged as one of the most pressing issues for businesses to address in this era of digitization. The use of cloud computing offers a solution to this problem by offering powerful security measures that increase the protection afforded to sensitive data (Ho et al., 2017). Cloud service providers guarantee that data is safeguarded from illegal access as well as a loss by using cutting-edge encryption technology and performing regular backups of the data. In addition, businesses have the ability to tailor the security measures and controls they use to match the requirements of their particular situations. Cloud computing helps companies preserve the confidence of their consumers and clients by protecting the important data they store in the cloud, and it results in organisations producing higher-quality work (Cetindamar et al., 2021).

The adaptability of cloud computing at a lower cost is an important additional benefit that leads to an improvement in the quality of the job. Cloud computing services, in contrast to more conventional on-premises solutions, make it possible for organisations to expand their resources in accordance with their needs. This flexibility helps companies to adapt rapidly to changes in demand, ensuring that they are constantly equipped with the required tools to provide high-quality work (Borangiu et al., 2019). This flexibility also enables organisations to adjust swiftly to changes in the market. The pay-as-you-go approach, which is provided by many cloud service providers, guarantees that companies only pay for the resources they use, which results in considerable cost savings for enterprises (Baharuddin et al., 2021).

The technology that runs in the cloud also plays a significant part in the process of supporting continuous improvement, which is an essential component of preserving and improving the quality of work. Cloud-based solutions are continually growing to suit the changing requirements of enterprises and get frequent upgrades and feature additions as part of this process. This guarantees that firms have access to the most recent technologies and are able to put into practise the most effective procedures, allowing them to remain one step ahead of their rivals. In addition, the massive amounts of data that are produced by cloud services have the potential to be mined for insightful and actionable analytics, which may assist businesses in making data-driven choices that will enhance their operations and the quality of their work (Al-Samarraie & Saeed, 2018).

In addition, the environmental sustainability that may be achieved via the use of cloud technology should not be ignored. Cloud services drastically reduce both the amount of energy used and the number of carbon emissions produced since they eliminate the need for physical infrastructure and hardware. This not only assists enterprises in accomplishing their sustainability objectives, but it also enhances the image and reputation of their brand, which, in the end, helps them succeed and ultimately make contributions towards a work that is of greater quality. Businesses that adopt eco-friendly business practises through the use of cloud technology have the opportunity to differentiate themselves from their rivals and attract clients and consumers who are environmentally sensitive (Aceto et al., 2020).

Businesses no longer invest in expensive hardware or software infrastructure to run their operations because the Cloud services offer a pay-as-you-go model, where businesses only pay for the services they use, making it a more affordable option for small and medium-sized businesses. Furthermore, cloud services provide enhanced security measures to protect sensitive business data (Bello et al., 2020). With advanced encryption technologies and secure data centers, cloud services ensure the privacy and confidentiality of

business information. The real estate sector is a highly competitive industry that relies on effective communication, collaboration, and organization to succeed. The use of cloud services has significantly impacted the quality of work performance in the real estate sector by improving operational efficiency, increasing productivity, and enhancing collaboration (Attaran, 2017).

Cloud services have transformed the real estate sector by offering innovative tools and applications that improve operational efficiency. One of the most substantial pluses of cloud services is that they allow real estate agents to access critical business data from any location with an internet connection (Warburton, 2016). In addition, this means that agents can work from home, in the office, or while travelling, without worrying about missing any important data or information. Cloud services also offer real estate agents applications that help streamline their workflow and automate routine tasks. For example, cloud-based property management software can automate tenant screening, lease management, rent collection, and maintenance requests. These applications reduce the amount of time and effort required to perform these tasks manually, allowing agents to focus on more critical aspects of their work (Ullah et al., 2018).

Cloud services have significantly increased the productivity of real estate agents by enabling them to work more efficiently and effectively. With cloud-based tools and applications, agents can access real-time data and information, collaborate with team members, and communicate with clients more easily. Moreover, this results in faster turnaround times, improved customer service, and better client satisfaction (Garg et al., 2018). Cloud services also offer real estate agents mobile applications that allow them to work on the go; for instance, mobile applications for property management allow agents to manage their property portfolio, respond to tenant requests, and view financial reports from their mobile devices. Additionally, this increases their productivity and responsiveness to clients, making them more competitive in the market (Fraihat et al., 2021).

Cloud services have revolutionized collaboration in the real estate sector by allowing agents to work together more efficiently and effectively. With cloud-based collaboration tools, agents can share files, documents, and information with team members, clients, and vendors in real-time (Shi, 2021). This improves communication, reduces errors, and enhances productivity. Cloud services also offer real estate agents virtual collaboration tools that allow them to conduct remote meetings, presentations, and inspections. For example, video conferencing tools enable agents to conduct virtual property tours and inspections, reducing the need for physical visits and increasing efficiency (Gupta et al., 2020).

Cloud services offer real estate agents momentous cost reserves likened to outdated on-premises solutions, and the cloud-based applications eradicate the requirement for exclusive hardware, software, and infrastructure, dipping the investment and operational costs associated with running a real estate business (Shenoy, 2019). Additionally, cloud services offer real estate agents flexible pricing plans, enabling them to scale their services up or down as per their business requirements. Cloud services have significantly impacted the quality of work performance in the real estate sector by improving operational efficiency, increasing productivity, enhancing collaboration, providing enhanced security measures, and offering cost savings. With cloud-based tools and applications, real estate agents can access critical business data from any location with an internet connection and work more efficiently and effectively (Jin & McElheran, 2017).

1.2. Problem Statement

The real estate sector is a vital contributor to the economy of Riyadh, Saudi Arabia, and the industry is highly competitive and constantly evolving, requiring real estate professionals to adopt innovative tools and technologies to remain competitive. The acceptance of cloud services in the real estate sector has been on the rise, with more and more companies moving their operations to the cloud to enhance productivity, collaboration, and efficiency. However, the sector faces several challenges, including inefficient data

management systems and a lack of IT capabilities that hinder productivity and limit growth opportunities. Cloud services have the potential to address these challenges by providing a cost-effective and efficient solution for managing and storing data and applications. Despite the potential benefits of cloud services, there is a lack of research on the impact of cloud services on work performance in the real estate sector in Riyadh, Saudi Arabia. This research intends to address this gap by examining the impact of cloud services on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia (Shenoy, 2019).

This research aims to fill this gap by investigating the impact of cloud services on the quality of work performance in the real estate sector in Riyadh, Saudi Arabia. Specifically, the study explores the extent to which the use of cloud services enhances work performance in terms of productivity, competency, success, and quality of work outcomes. By addressing this research problem, the study provides valuable insights into the potential reimbursements of cloud services for the real estate sector in Riyadh, Saudi Arabia, and contributes to the development of effective strategies for improving work performance and driving growth in the sector (Chen et al., 2022).

1.3. Research objectives

The research objectives of this research work are:

- ❖ To examine the impact of cloud services on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia.
- ❖ To identify the advantages and disadvantages of cloud services in the real estate sector of Riyadh, Saudi Arabia.
- ❖ To develop best practices for implementing cloud services in the real estate sector of Riyadh, Saudi Arabia.

1.4. Research Questions

- ❖ What impact do cloud services have on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia?
- ❖ What are the advantages and disadvantages of cloud services in the real estate sector of Riyadh, Saudi Arabia?
- ❖ What are the best practices for implementing cloud services in the real estate sector of Riyadh, Saudi Arabia?

1.5. Significance of the study

The real estate sector is a crucial sponsor of the financial system of Riyadh, Saudi Arabia, and the adoption of cloud services has the potential to enhance operational efficiency, improve collaboration and communication, and ultimately improve the quality of work performance of real estate professionals. Understanding the influence of cloud services on the real estate sector in Riyadh can inform policy decisions and strategic planning for companies in the sector, ultimately contributing to the growth and development of the industry. This research can provide insights into the disputes encountered by real estate professionals in Riyadh and how the adoption of cloud services can help to address these challenges. This information can be used by real estate companies to identify areas for improvement in their operations and develop strategies to enhance the quality of work performance of their employees (Fraihat et al., 2021).

In addition, this research can contribute to the body of knowledge on the influence of cloud services on work performance in the context of the real estate sector. As cloud services adoption continues to grow, it is important to understand how it impacts different sectors and industries and how it can be leveraged to improve work performance. This research can contribute to the understanding of the role of technology in the workplace in Saudi Arabia. As the country continues to diversify its economy and invest in technology, understanding the

impact of cloud services on the real estate sector can inform broader policy decisions related to technology adoption and digital transformation. In last, this research on the influence of cloud services on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia, is significant for its potential to inform policy decisions, improve operations, contribute to the body of knowledge on technology adoption in the workplace, and inform broader discussions on the role of technology in the Saudi Arabian economy (Bello et al., 2020).

1.5.1. Managerial Relevance

The impact of cloud services on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia, is of significant managerial relevance. The cloud enables real estate professionals to better manage operations, reduce redundancies, and make better decisions. By using cloud services, real estate agents are able to manage listings more effectively, keep tabs on client interactions, and get access to critical information from any location. Managers may now take advantage of opportunities and deal with threats in Riyadh's brisk real estate market thanks to this improved access. Cloud computing also makes it easier for teams to work together effectively, leading to greater productivity. With real-time access to property listings, client profiles, and transaction updates, real estate teams can better communicate and collaborate. Success in the cutthroat real estate industry depends on a number of elements, including excellent customer service and satisfied clients. The increased data security made possible by cloud services is another reason why the real estate industry is adopting them. Managers have the ability to tailor security policies to the unique requirements of their businesses, therefore protecting their customers' confidence and preserving their standing in the industry. Lastly, the scalability of cloud technology helps the real estate industry respond quickly and effectively to shifts in consumer demand. Managers may adjust allocations in response to changing

demands without having to buy new equipment, which lowers overhead and frees up time and money to concentrate on providing superior service to customers.

1.5.2. Scientific Relevance

The impact of cloud services on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia, presents a scientifically relevant area of investigation. Studying the adoption of cloud technology in this sector contributes to a broader understanding of its effects on business processes, organizational performance, and the overall industry landscape. Using a scientific approach, examining the connection between cloud services and job performance in the real estate industry may assist in pinpointing current best practices, obstacles, and opportunities for growth. The real estate business may use this information to guide the creation of new cloud-based tools and apps. In addition, examining the role of cloud technology in expediting procedures and facilitating real-time collaboration among real estate professionals can provide valuable insight into the dynamics of cooperation and communication in a technology-driven environment. The creation of solutions that increase organizational efficiency and production may result from a better grasp of these processes. The study of cloud services in the real estate industry can also contribute to data security and privacy knowledge. As the real estate sector handles private client information, knowing how to keep that information safe in the cloud is crucial. The findings of this study have applications outside the real estate industry and may help guide the creation of cutting-edge security procedures and protocols. Moreover, understanding how cloud technology may be scaled and how it affects the environment can provide light on the optimisation of resources and the ecological effect of the real estate industry. These results may help with planning for corporate expansion while also protecting the environment.

CHAPTER II

LITERATURE REVIEW

This chapter presented a comprehensive examination of previous work that has examined the effects of cloud services on the productivity of different businesses, with a focus on the real estate industry in Riyadh, Saudi Arabia. This chapter discussed the evolution of cloud computing, its fundamental technologies, as well

as the primary benefits and challenges of its adoption. In addition, it explored the ways in which cloud services have been put to use in the real estate industry and how they have impacted productivity, decision-making, and customer service. The analysis also pointed out how cloud computing helps with the essential real estate tasks of teamwork, data accessibility, and resource management. Concerns about data privacy, security, and the need to spend on the training and development of staff were all discussed in this chapter as possible roadblocks to the wider use of cloud services. This chapter laid the groundwork for an empirical study of how cloud services have affected the quality of job performance in the real estate industry in Riyadh, Saudi Arabia, by integrating the results from the existing body of research.

2.1. Cloud Services Adoption and Integration: An Overview

The distribution of computer services, including storage, processing power, databases, networking, software, and analytics, through the internet is what is referred to as cloud technology, which is also sometimes referred to as cloud computing (Shoshtari, 2013). This technology has completely altered the manner in which organizations function by making it possible for them to have on-demand access to highly effective computer resources and services. It is vital to investigate the history of cloud technology as well as its progress, acceptance, and incorporation into the corporate sector in order to get an understanding of its relevance (Golightly et al., 2022).

The concept of time-sharing, which allows several users to use a single computer system at the same time, can be traced all the way back to the 1960s and the work of the American computer scientist John McCarthy. Here is where the history of cloud computing can be found. This idea was very important in the early stages of the development of cloud computing (Zhang et al., 2020). But, the introduction of the internet in the 1990s made possible the development of cloud computing in its current form that we are familiar with today.

The internet offered the essential infrastructure for linking computers and sharing resources over great distances, which ultimately led to the conception of the idea of cloud computing (Ogidiaka et al., 2022).

Bajdor (2022) highlighted that there had been three different stages in the development of cloud computing since its inception. The beginning of the first phase coincides with the appearance of application service providers in the late 1990s (ASPs). These organizations provided businesses with access to a variety of software programs through the internet, so doing away with the need that the software be installed and maintained locally. Salesforce was one of the early pioneers in this field and was one of the first companies to provide customer relationship management (CRM) services in the cloud salesforce was founded in 1999 (Golightly et al., 2022)

The introduction of utility computing marked the beginning of the second phase of cloud computing, which started in the early 2000s (Wyld, 2018). Businesses such as Amazon and Google have begun selling computing resources on a pay-as-you-go basis. This enables companies to adjust the amount of processing power they use in accordance with their requirements. The method in which corporations used computer resources was revolutionized by this approach, which resulted in increased adaptability and efficiency (Adjei et al., 2021).

Duan et al. (2015) asserted that the third phase, which started in the late 2000s, saw the rise of cloud service models such as infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS) and this period lasted until the early 2010s. These models offered a variety of cloud-based services to enterprises, ranging from bare computer resources to fully managed software programmes. These services were given through the cloud. PaaS suppliers include Google App Engine and Heroku, whereas famous examples of IaaS providers include Amazon Web Services (AWS) and Microsoft Azure. Google Cloud Platform is another prominent example of a cloud computing platform. Qi et al. (2017) indicated that SaaS providers

like Salesforce, Microsoft Office 365, and Google Workspace are examples of companies that supply organizations with completely managed software solutions (Qi et al., 2017).

The study by Rittinghouse & Ransome (2016) stated that the widespread acceptance of cloud computing might be attributed to a number of reasons, including financial benefits, more flexibility, and enhanced scalability. Likewise, Langmead & Nellore (2018) indicated that businesses are able to steer clear of the up-front expenses that come with the purchase and upkeep of gear and software by using cloud computing services. Instead, they pay for the resources that they use, which results in more efficient use of resources. The capacity to expand resources on-demand also helps organisations to adapt rapidly to changes in market demand, ensuring that they always have the appropriate processing power at their disposal and this is because the ability to grow resources on-demand is scalable (Zhang et al., 2020),

The creation of application programming interfaces, or APIs, which make it possible for different software programs to connect with one another, has made it easier for organizations to use cloud computing. Because of this, companies are now able to design bespoke processes and easily connect cloud services with their current information technology infrastructure (Adjei et al., 2021). In addition, cloud service providers often provide pre-built connectors with widely used apps developed by third parties, which makes it simpler for enterprises to embrace cloud technology (Jonas et al., 2019).

Qian et al. (2014) revealed that the concerns surrounding data security and privacy had been mitigated thanks to the development of more sophisticated security protocols and encryption methods, which have emerged with the maturation of cloud computing technologies. Borangiu et al. (2019) highlighted that cloud service providers now provide advanced security safeguards that prevent sensitive data from being accessed in an unauthorized manner or lost entirely. This has contributed to increased levels of confidence in cloud computing technologies and has encouraged enterprises to move their mission-critical operations to the cloud.

The research by Zbořil (2023) asserted that the use of cloud computing had had a revolutionary effect on a wide range of businesses, most notably in the areas of healthcare, banking, retail, and real estate, to mention a few. Businesses have been able to improve their operations, increase their capacity for cooperation, and make choices that are driven by data as a result of the availability of on-demand access to sophisticated computing resources and services. As a result, both productivity and efficiency have risen to cut costs and enhance the overall quality of work in all relevant industries (Alharthi et al., 2015).

The development of cloud computing will likely result in more technological advances and developments in the near future proposed by Gangwar et al. (2015). It is anticipated that the introduction of edge computing, which includes processing data closer to the source, would complement cloud technology by lowering the amount of delay experienced by data-intensive applications and boosting their overall performance. In addition, Phaphoom et al. (2015) stated that developments in artificial intelligence (AI) and machine learning (ML) are anticipated to be integrated with cloud services in an increasing number of instances. This will make it possible for businesses to derive more advanced insights from their data and improve their methods of decision-making (Phaphoom et al., 2015).

The proliferation of multi-cloud and hybrid cloud techniques is another shift that has taken place in the cloud computing ecosystem. Almaiah & Al-Khasawneh (2020) revealed that when it comes to satisfying their own requirements and prerequisites, businesses are progressively leaning towards the utilisation of a mix of public and private clouds as well as different cloud service providers. This strategy gives businesses the ability to capitalise on the advantages offered by a variety of cloud service providers, steer clear of being locked into a single vendor, and keep their data safe while adhering to the requirements that are particular to their sector (Hsu & Lin, 2015; Shoshtari, 2013).

The process of developing and deploying software applications has been revolutionized as a direct result of the widespread use of cloud-native technologies such as containerization and micro services (Zhang et al., 2020). Because of this, companies are now able to develop applications that are more robust, scalable, and adaptable, as well as ones that can be readily updated and maintained. The business should anticipate more advancements in application development and deployment best practices as cloud technology continues its march towards greater development (Ogidiaka et al., 2022).

Sharma et al. (2016) indicated that Property Technology is a rapidly growing sector in the real estate industry, and it involves the use of technology to improve the efficiency and effectiveness of real estate transactions, operations, and investments. PropTech refers to a wide range of technologies, including artificial intelligence (AI), automation, virtual reality (VR), blockchain, the Internet of Things (IoT), and cloud computing (Khayer et al., 2020). These technologies are being used to automate processes, streamline operations, and improve customer experiences. The use of PropTech can lead to cost savings, increased profitability, and improved customer service. For instance, AI and automation can help to reduce costs associated with manual processes and administrative tasks (Kaur & Solomon, 2021).

Additionally, Borangiu et al. (2019) indicated that the use of virtual reality helps to create immersive experiences, allowing potential buyers to virtually explore a property before making an offer. PropTech also has the potential to revolutionize the real estate industry, and for example, blockchain technology is used to securely store and transfer data related to real estate transactions, and this reduces the amount of paperwork required for transactions and makes transactions more secure. Additionally, IoT technology can be used to improve the efficiency of building maintenance, as well as to improve energy efficiency and reduce energy costs (Starr et al., 2020).

2.2. Role of Cloud Technology in enhancing Quality of Work

Performance

The role of cloud technology in improving the quality of work performance has become more important in many industries, including the real estate sector. Cloud computing has the potential to revolutionize work performance and create an environment that is more productive, efficient, and focused on the needs of customers. It does this by providing users with a wide variety of tools and services that can improve decision-making, streamline business processes, and encourage collaboration (Gupta et al., 2022).

The research by Oredo & Dennehy (2022) highlighted that the automation of labour-intensive and time-consuming processes is one of the key ways that cloud technology improves the efficiency of workplace operations. For instance, in the real estate industry, cloud-based property management systems are able to handle operations such as the collecting of rent, the generating of invoices, and the monitoring of repair request status updates. Ravele & Mtotywa (2022) indicated that real estate professionals might save time and concentrate on activities that provide more value to their business by automating these procedures. Some examples of these activities include cultivating connections with customers, acquiring property, and making strategic moves. This greater efficiency may potentially lead to better levels of production as well as an overall improvement in job performance (Rittinghouse & Ransome, 2016).

LAKHWANI et al. (2020) revealed that the use of cloud technology is also an essential component in the process of making decisions based on collected data. Companies that deal in real estate create massive volumes of data from a variety of sources, such as listings of available properties, interactions with customers, and patterns in the market. Baharuddin et al. (2021) stated that businesses such as Real estate professionals might be assisted in the processing and analysis of this data by using data visualisation platforms and cloud-based analytics tools. This provides real estate professionals with the actionable insights necessary to make

educated choices (Baharuddin et al., 2021). With the use of these insights, companies are able to optimize their marketing tactics, recognise chances for lucrative investments, and enhance customer service, eventually leading to improvements in both work performance and client contentment (Murad et al., 2022).

Qi et al. (2017) highlighted the important advantage of using cloud computing is the enhancement of members of a team's ability to communicate with one another and work together. Cloud-based systems, such as those used for project management, file-sharing services, and communication applications, make it possible for individuals working in the real estate industry to interact and exchange information in real-time, regardless of where they are physically located. Al-Samarraie & Saeed (2018) stated that because of this improved cooperation, processes might become more efficient, decision-making may occur more quickly, and overall job performance may improve. For instance, a team working on a property development project may utilise a cloud-based project management application to monitor progress, assign tasks, and communicate updates with stakeholders (Wyld, 2018). This would ensure that everyone is aligned and working towards the same objectives and would save time (Zbořil, 2023).

In addition, Ooi et al. (2018) stated that cloud computing makes it possible for enterprises to grow their operations more efficiently, which may have a beneficial influence on the amount of work that is accomplished. When it comes to the management of an ever-increasing amount of work, real estate companies often need extra resources as they develop and expand. Alzakholi et al. (2020) highlighted that Cloud computing provides organisations with the ability to expand their computing resources and services on demand, allowing them to ensure that they have the required infrastructure to support their expansion without having to spend unnecessary expenditures. Its scalability may assist firms in maintaining a high level of job performance even as they continue to expand and adapt to shifting market circumstances and the varying requirements of their customers (Alzakholi et al., 2020).

In addition to these advantages, Georgakopoulos et al. (2016) using cloud technology may also improve job performance by increasing mobility and enabling remote access to resources. While working in real estate, professionals are often needed to carry out their duties in a variety of settings, including client meetings, property showings, and industry events. Abdel-Basset et al. (2018) revealed that the ability to access cloud-based products and services from any device that has an internet connection enables workers to remain connected and productive even when they are away from their desks. This enhanced mobility may lead to higher job performance by ensuring that workers have access to the information and resources they need, regardless of where they are located. This can be accomplished by ensuring that employees have access to the information and resources they need (Abdel-Basset et al., 2018).

The study by Abdelaziz et al. (2018) stated that cloud computing has the potential to boost overall work performance by protecting the confidentiality and security of stored data. Since they deal with sensitive customer information, real estate organisations are required to conform to stringent standards surrounding the safety of customer data. Encryption, access control, and frequent data backups are just some of the powerful security measures that cloud service providers provide to keep sensitive data from being accessed inappropriately or lost entirely. Yang et al. (2016) indicated that real estate companies might earn their clients' confidence and keep a solid reputation if they protect the information their customers provide about themselves. This has the potential to improve both the efficiency of their job and the level of pleasure their customers feel (Yang et al., 2016).

In addition, Maina (2017) indicated that Digital marketing tools had revolutionized the way businesses in the real estate sector operate and engage with customers. With the increasing adoption of digital technologies, real estate businesses can leverage digital marketing tools to drive customer engagement, generate leads, and increase sales (Al-Samarraie & Saeed, 2018). One of the most significant effects of digital

marketing tools is their ability to enhance the visibility and reach of real estate businesses. With the use of social media platforms like Facebook, Instagram, and Twitter, real estate businesses can reach a wider audience and increase their brand awareness. This allows them to showcase their properties and services to potential customers and generate leads (Aceto et al., 2020).

Digital marketing tools also enable real estate businesses to personalize their marketing messages and target specific customer segments. By using data analytics tools like Google Analytics, real estate businesses gain insights into customer behaviour and preferences, allowing them to tailor their marketing campaigns to specific customer needs. This leads to higher engagement and conversion rates, resulting in increased sales and revenue. Another significant effect of digital marketing tools is their ability to provide real-time customer support and engagement. With the use of chatbots, businesses engage with customers in real-time, answer their questions, and provide personalized support, and this results in increased customer satisfaction and loyalty, as customers feel valued and heard by the business (Ullah et al., 2021).

Chen et al. (2022) indicated that Cloud computing has become a critical technological innovation that has the potential to impact business performance in various ways. The adoption of cloud computing improved efficiency, productivity, and profitability, as well as reduced costs and enhanced data security. Empirical research was conducted by collecting data from publicly listed firms in various industries that have adopted cloud computing technology. The data collected includes financial and non-financial data such as revenue, profitability, market share, and adoption of cloud computing technology. Firms that have adopted cloud computing technology show higher levels of profitability, increased revenue, and market share. These results suggested that cloud computing is a significant contributor to the overall performance of listed firms. Furthermore, the study also found that the influence of cloud computing on firm performance is moderated by the firm's size and level of IT infrastructure. Larger firms tend to benefit more from cloud computing due to the

economies of scale, while firms with high levels of IT infrastructure tend to have a lower impact on cloud computing adoption.

Another study by JK & MZ (2021) highlighted that Information and Communication Technology (ICT) has revolutionized the real estate business, particularly in real estate management and appraisal practice. ICT has made real estate management more efficient, cost-effective, and faster and has also enabled the real estate industry to alter to the shifting requirements of the market by providing real-time data and analysis. One of the possibilities of ICT in real estate management is the ability to manage properties remotely; with the use of property management software and mobile applications, property managers can manage properties from any location.

Real estate firms track rent payments, schedule maintenance, and communicate with tenants through online platforms, and this reduces the need for physical presence, which saves time and costs (Aceto et al., 2020). ICT also offers potential in real estate valuation practice, and with the use of data analytics and machine learning algorithms, real estate valuers can analyze real estate market trends, identify patterns, and make more accurate valuations. The use of online databases, such as real estate portals, also enables values to access data on comparable properties, which can be used to determine fair market value. Moreover, ICT has potential in marketing and advertising real estate properties. With the use of social media platforms and digital advertising tools, real estate agents can reach a broader audience, showcase their properties, and generate leads. Digital marketing tools also enable real estate agents to personalize their marketing messages, target specific customer segments, and track customer engagement (Alzakholi et al., 2020).

2.3. Cloud Technology Adoption and Organizational Culture in the Real Estate Sector

Gangwar et al. (2015) stated that the adoption of cloud technology and organizational culture are inextricably intertwined, especially in the real estate sector of the economy. The culture of a real estate company may either make the incorporation of new solutions easier or make it more difficult, and so the successful deployment of cloud technology inside a real estate company is primarily dependent on the culture of the company.

The article by Sabi et al. (2016) stated that the perceptions that employees and management have towards the adoption of new technologies, such as cloud services, are heavily influenced by organisational culture, which can be defined as the shared values, beliefs, and practises that exist within an organisation. This plays an important role in shaping attitudes towards the adoption of new technologies. El-Gazzar et al. (2016) found that employees might be encouraged to adopt new technology and be more responsive to change when a firm fosters an innovative and forward-thinking culture across the workplace. On the other hand, a culture that is conservative and risk-averse might result in resistance to change, which can slow down the adoption of cloud technology.

Isensee et al. (2020) suggested that the degree of trust that exists inside a company is one of the most important aspects of organisational culture that may have an effect on how quickly cloud technology is adopted. The staff members need to have faith that the management will continue to support the implementation of new technologies and that the advantages of cloud computing will exceed the potential drawbacks (Dincă et al., 2019). The management team should address possible concerns, such as data security and privacy, while communicating the benefits of using cloud technology, such as higher productivity, cost savings, and improved decision-making. This will help establish confidence among employees and customers.

Real estate companies may establish an atmosphere in which their workers feel encouraged to learn new technologies and adopt them if they cultivate a culture of trust inside their enterprises (Chang & Ramachandran, 2016).

The study by Musamali & Muchelule (2022) highlighted that cloud computing practices have become increasingly relevant in improving the execution of real estate developments in Nairobi County, Kenya. The availability of cost-effective cloud-based solutions provides real estate projects with on-demand access to computing resources and storage. The most significant benefits of cloud computing practices are the ability to store and back up project data in a secure manner, and the use of cloud storage solutions like Google Drive, Microsoft OneDrive, and Dropbox ensures that project data is safe and easily accessible to authorized stakeholders.

Likewise, Wang et al. (2020) found that collaboration tools are essential in managing real estate projects and can significantly enhance project performance. Cloud-based collaboration tools like Google Docs, Trello, and Asana enable team members to collaborate remotely and in real-time. This ensures that tasks are completed efficiently, and project timelines are met. Additionally, cloud-based project management software solutions like Procore, PlanGrid, and Builder trend are gaining popularity in the real estate industry. These tools offer a range of features, such as scheduling, budgeting, and task management, all in one central location. By leveraging cloud-based project management software solutions, real estate projects can streamline their operations, reduce manual processes, and improve project delivery times (Wang et al., 2020).

Zhen et al. (2021) revealed that the degree to which a company is flexible and adaptable is another crucial feature of organisational culture that might influence the adoption of cloud technologies. Cloud services are more likely to be effectively incorporated into the operations of real estate enterprises if such organisations are flexible, open to change, and prepared to modify their processes and workflows in order to accommodate

new technology. A culture of flexibility may be promoted inside an organisation by rewarding innovative ideas, encouraging workers to experiment with new technology, and offering chances for continual learning for staff members. Real estate companies should guarantee that their staff members are ready to accept cloud technology and take advantage of its advantages by cultivating an atmosphere that places a high value on flexibility and providing such an environment (Chang & Ramachandran, 2016).

Ho et al. (2017) stated that the empowerment of workers is yet another essential component of the company culture that might have an effect on the adoption of cloud technologies. Real estate companies can encourage their employees to take ownership of the process of adopting cloud technology by including employees in the decision-making process and giving employees the freedom to make their own choices regarding the tools and services they use. Similarly, Caldarelli et al. (2016) asserted that involving employees in the decision-making process also helps employees feel more invested in the outcome of the process. Empowered workers are more likely to feel involved in the success of the technology implementation and are better able to negotiate the difficulties and possibilities given by cloud technology. Empowered employees are more likely to feel invested in the success of the technology implementation.

In addition, the existence of digital champions or change agents inside the company may have a substantial influence on the business's ability to successfully embrace cloud technology. Those who have a comprehensive comprehension of cloud computing and its possible advantages and who are able to advocate for the use of the technology inside a business are referred to as digital champions (Sharma et al., 2016). Real estate companies may guarantee that there is a strong voice inside the company supporting the advantages of cloud technology and pushing its effective deployment if they identify digital champions and nurture them. This can be accomplished by finding and nurturing digital champions (Shahzad et al., 2019).

The study by Cetindamar et al. (2021) revealed that the effective use of cloud technology might also be facilitated by fundamental characteristics of company culture, such as the sharing of knowledge and cooperation among employees. Employees of real estate companies that foster a culture of open communication and information sharing may help to establish an atmosphere in which the business as a whole benefit from the experiences and knowledge of each individual employee. This approach to working together may assist workers in overcoming any difficulties associated with the adoption of cloud technology and allow them to make the most of the tools and services that are available to them (Caldarelli et al., 2016).

The last factor that might have a big influence on the level of success seen when adopting cloud technology is an organization's perspective on the possibility of failure (Belle & Dyk, 2019). Implementing new technology often entails a certain degree of risk and uncertainty, and businesses that embrace a culture of learning from failure are better able to negotiate the hurdles involved with the adoption of cloud technology (Qian et al., 2014). Real estate firms may create an atmosphere in which workers are more inclined to take chances and embrace innovation by cultivating a culture in which failure is considered an opportunity for development and learning (Ogidiaka et al., 2022).

2.4. Data Security, Scalability, and Business Agility in Cloud Services for Real Estate

Data security, scalability, and business agility are three critical factors in the successful implementation of cloud services within the real estate sector. These elements play a vital role in determining how cloud technology can be leveraged to optimize business operations, enhance work performance, and adapt to changing market conditions (Mahmood & Ramachandran, 2018). Kim (2015) indicated that data security is a paramount concern for real estate businesses, as they handle sensitive client information and must comply with strict data protection regulations. Cloud service providers offer a range of security features designed to

protect data from unauthorized access, loss, and corruption. By adopting cloud services, real estate organizations can take advantage of these robust security measures to ensure the integrity and privacy of their clients' data, thereby building trust and maintaining a strong reputation.

Some of the key data security features offered by cloud service providers include encryption, access control, and regular data backups (Sabri, 2016). Encryption ensures that data is stored in a format that is unreadable without the proper decryption key, making it more difficult for unauthorized users to access sensitive information. Access control mechanisms, such as multi-factor authentication and role-based access controls, can be used to limit access to data based on user roles and responsibilities, further reducing the risk of unauthorized access. Regular data backups can also help real estate businesses recover from data loss events, such as hardware failures or cyberattacks, by providing a secure copy of their data that can be restored as needed (Vasiljeva et al., 2017).

Scalability is another critical factor for real estate businesses looking to adopt cloud services (Kollolu, 2020). The ability to scale computing resources and services on-demand allows organizations to respond more effectively to fluctuating workloads and changing market conditions. This flexibility can help real estate businesses maintain high levels of work performance even during periods of rapid growth or increased demand for their services (Al Isma'ili et al., 2016).

Kerravala & Michels (2015) highlighted that cloud-based solutions enable real estate businesses to add or remove resources, such as storage, processing power, or user accounts, as needed, without the need for significant capital investments or complex infrastructure changes. This on-demand scalability can lead to cost savings, as organizations only pay for the resources they use rather than maintaining the excess capacity to accommodate potential future needs. Furthermore, the ability to quickly scale resources can help real estate

businesses seize new opportunities and respond more effectively to market changes, such as shifts in property demand or emerging trends in the industry (Dr Sunil Joshi, 2021).

Dincă et al. (2019) stated that business agility, the ability to rapidly adapt to changing market conditions and seize new opportunities, is another crucial factor for real estate organizations considering the adoption of cloud services. Cloud technology can facilitate business agility by providing access to a wide range of tools and services that enable real estate professionals to work more efficiently, make data-driven decisions, and collaborate more effectively (Kerravala & Michels, 2015).

For example, cloud-based analytics and data visualization tools can provide real estate organizations with real-time insights into market trends, property performance, and customer preferences, allowing them to make informed decisions and respond more quickly to changing market dynamics (Khayer et al., 2020). Similarly, LAKHWANI et al. (2020) highlighted that cloud-based collaboration and project management tools could help real estate teams work together more effectively, streamlining workflows and enabling faster decision-making.

Moreover, cloud services can support business agility by enabling real estate organizations to adopt new technologies and innovative solutions more quickly. With cloud-based platforms, businesses can access and integrate cutting-edge tools and services without the need for significant infrastructure investments or lengthy implementation processes. This flexibility allows organizations to stay ahead of the competition and respond more effectively to emerging market trends and customer demands (Kerravala & Michels, 2015; Golightly et al., 2022).

2.5. Theoretical Framework

The theoretical framework for this research work is based on a combination of several key concepts and theories related to cloud services, work performance, and IT capability. Cloud services refer to the use of

cloud-based technologies such as SaaS, PaaS, and IaaS to store and manage data and applications on the internet (Bello et al., 2020). Work performance indicates the degree to which an individual or organization successfully meets or exceeds established goals and expectations for productivity, quality, efficiency, and effectiveness in performing job tasks. IT capability refers to an organization's ability to effectively use and leverage technology to achieve business objectives and strategic goals (Attaran, 2017).

The Resource-Based View (RBV) theory indicates that a company's distinctive resources and competencies, including IT capabilities, can be a cause of competitive advantage and can lead to superior performance outcomes (Davis & DeWitt, 2021). Social Exchange Theory suggests that individuals engage in social exchanges with others, where they receive benefits or rewards in exchange for their contributions, such as the use of cloud services in the workplace (Ahmad et al., 2023). Task-Technology Fit Theory suggests that the effectiveness of technology in the workplace depends on how well it supports and aligns with the tasks and goals of the organization and its employees. By combining these concepts and theories, the theoretical framework for this research work aims to provide a thorough interpretation of how the use of cloud services impacts work performance in the real estate sector in Riyadh, Saudi Arabia. This framework will serve as a guide for data collection, analysis, and interpretation, helping to ensure that the research outcomes are grounded in established theories and concepts in the field (Spies et al., 2020).

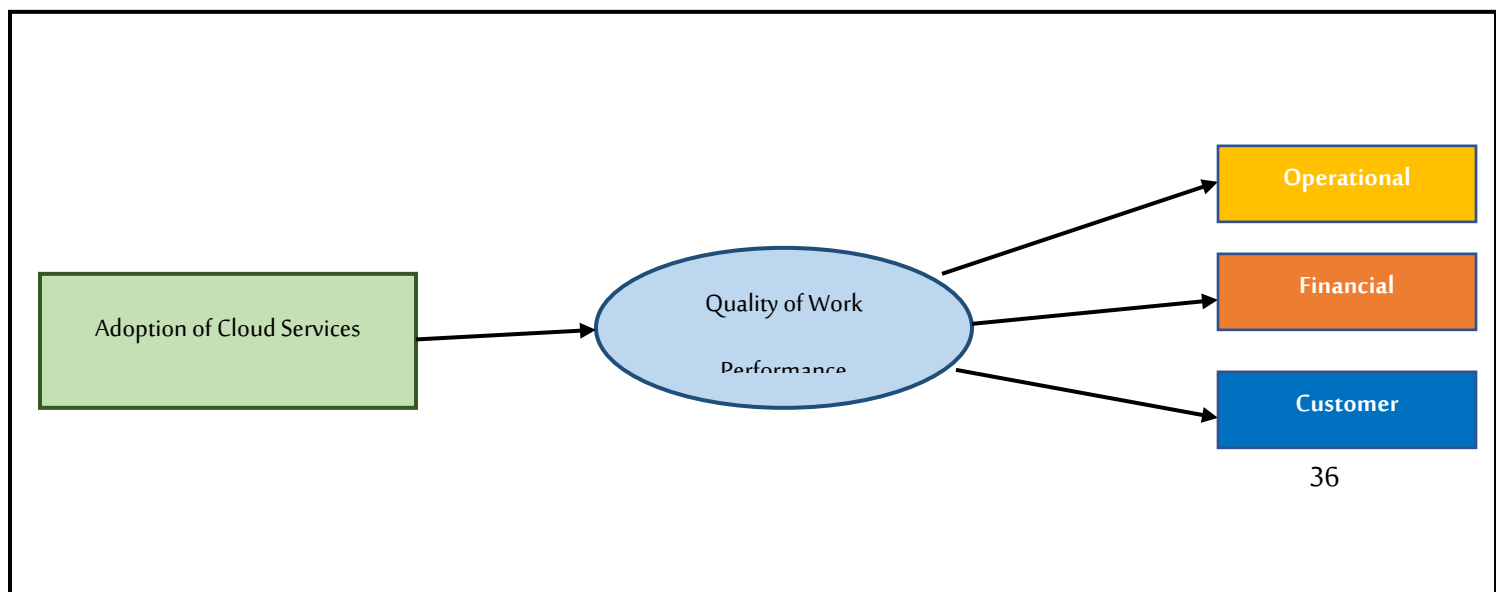


Figure 1: Theoretical Framework

Independent Variable

Dependent Variable

2.6. Research Hypothesis

H₁: *Cloud services have a positive effect on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia.*

H₂: *Cloud services have a significant impact on the speed of completion of projects in the real estate sector of Riyadh, Saudi Arabia.*

H₃: *Cloud services have a positive effect on the accuracy of records kept in the real estate sector of Riyadh, Saudi Arabia.*

CHAPTER III

RESEARCH METHODOLOGY

This research work is based on a quantitative approach and follows the descriptive research design. This research employed primary data analysis, and the data collection method was an online survey. A self-constructed questionnaire was used to collect data from the target population, following a broad review of the relevant literature. To collect the data, a Google form was used, and the participants were required to provide informed consent before participating. Only participants who willingly consent to participate will be considered for the study. An online link was generated and shared with the research participants to access the questionnaire. The collected data was examined using statistical software such as SPSS and MS Excel. SPSS, in the form of statistical packages, was used for data analysis, employing multiple techniques. MS Excel was utilized for data coding and cleaning to transform the data from qualitative to quantitative form. Data coding converted opinion-based data into a more comprehensible numerical form. Data cleaning removed irrelevant data and outliers from the collected dataset. The internal reliability of the data was measured using Cronbach's alpha, which measures the variables' direction towards the latent variable. Multivariate analysis techniques were employed to reduce the data's volume and size. Summary statistics were used to transform the data, while correlation and regression analysis was conducted to assess the relationship and impact between independent and dependent variables.

3.1. Research Approach

This research project uses a quantitative method and a descriptive research design. This research project used the primary data method to get first-hand information that could be used to analyses and explain the results. The quantitative method of research involves gathering and analyzing numerical data to test

hypotheses and find out how different variables are related. This method is frequently employed in the social and natural sciences because it allows researchers to derive statistical inferences about a community from a sample of people. The researcher may use statistical methods to examine the data, drawing conclusions about the whole population based on the sample and putting hypotheses about the correlations between variables to the test (Lucca & Wright, 2022). In a quantitative study, there are many different types of research designs that can be used. The goal of experimental designs is to study the impact of a change in one or more independent variables on a dependent one. Researchers use quasi-experimental designs to compare two or more groups who have been subjected to the same set of circumstances but for which the researcher lacks complete control over the assignment of people. Non-experimental designs involve data collection on subjects in their natural setting which may involve observational and survey research (Boeren, 2017).

This study was well-designed, and the results were accurate and dependable since the researchers used a quantitative research technique and descriptive research. This meant thoroughly organizing the design of the research, choosing the right sampling and data collection methods, and making sure that the study had enough statistical power to find the relationships being studied and that the outcomes of the research were correctly interpreted. In order to generate reliable conclusions from data, complicated statistical methods sometimes need in-depth examination. This study evaluated its findings in light of the research topic posed, and its limitations were taken into serious consideration. With the quantitative method, researchers gather and analyse data in order to test a certain theory or hypothesis, which is similar to the deductive method. The goal of this method is to determine whether or not a broad theory or hypothesis is supported by the available evidence (SÜRÜCÜ & MASLAKI, 2020).

The deductive method was utilized in this scientific study because it allowed the researcher to test specific predictions or hypotheses about how the world functions. It is a methodical and logical approach to

research that begins with a theory or hypothesis and employs data to support or refute the theory. The researcher was also able to make conclusions regarding the links between variables based on data due to the deductive method. In addition, it is a highly structured approach to research, which makes it ideal for verifying complex hypotheses or theories. The researcher also used this strategy to give careful consideration to the study's sampling procedure, which impacts the reliability of the findings.

3.2. Research Design

Descriptive research methods were used to gather and analyze data with the purpose of characterizing a certain phenomenon or set of people in this study. Descriptive studies are conducted to understand the characteristics of a population and the connections between different factors. Through the use of questionnaires, data may be collected from a large cross-section of the population (Atmowardoyo, 2018). In this research, a Google form survey was used to collect data, and the sample was selected using a basic random sampling procedure. SPSS and Microsoft Excel were used to conduct the analysis, and methods, including data mining and coding, were used to convert qualitative information into quantitative data to identify and remove anomalies. Principal component analysis (PCA) was used to help make sense of the massive amount of data and unearth actionable insights. The data was summarized using summary statistics, and internal consistency was evaluated using Cronbach's alpha. To further investigate the connection between the dependent and explanatory variables, a multiple linear regression analysis was carried out. Factor analysis was used to extract latent components from the observed variables after a KMO test was performed to ensure the data were suitable for the study (Leavy, 2022).

3.3 Targeted Population and Sample size

The population is all the individuals or entities in existence that meet the criteria being studied. The participants in this survey were all stakeholders working in the real-estate sector in the Saudi Arabian Kingdom.

The demographic under investigation in this study consists of all workers and stakeholders in the real-estate sector. (Bujang et al., 2018). This research focused on all the people employed in the real estate sector in the Kingdom of Saudi Arabia as the target population. Random sampling was used in this study, and 100 people were targeted working in real estate IT departments; a descriptive research design was used in combination with a quantitative research approach. The use of random sampling ensured that the outcomes were unbiased and transparent.

3.4 Research Sampling

A research sample is a representative selection from the whole population. Sampling is a method used to generalize about a larger population based on information gathered from a smaller subset of that population. All workers and stakeholders connected to the real-estate sector were considered for this survey. This research aimed to identify all the stakeholders employing cloud services in the real-estate business. In this study, 100 employees and other stakeholders served as the sample. This study employs a quantitative methodology, employs a random sample strategy, and makes use of descriptive research choices. Random sampling was used to ensure that the results were objective and easily understood. The researcher made sure their sample was representative of the whole population by drawing names out of a hat. In order to ensure that the sample picked is representative of the population, random sampling is one of the most common methods of sampling employed in research. The reliability of the study's findings and the soundness of its conclusions were both assured by this procedure (Bujang et al., 2018).

3.5 Data collection Instrument

This research project used a questionnaire to collect data through a survey method, and a survey is a method of gathering data from a large population. It is a collection of questions asked to respondents to learn more about their demographics, perspectives, and habits. The questionnaire utilized in this study has many

questions with the intended purpose in mind. A 5-point Likert scale ranging from "strongly disagree" to "strongly agree" was used to record each respondent's opinion on each topic. All questions were thoroughly addressed by collecting and analyzing participant replies. Only responses from those who have finished the survey were used for the results. The questionnaire questions were developed with great care to ensure that all contributed to the study's goals. The survey was distributed using internet tools like Google Forms. Information was gathered from research participants using an online questionnaire for which a link was provided. Questions in the survey or questionnaire probed respondents on a range of factors, including their demographics, views, behaviours, and attitudes about the issue at hand (Saginova et al., 2020).

3.6 Data Analysis

Data analysis is the process of using statistical and analytical methods to investigate, demonstrate, and estimate information. Descriptive statistics, such as mean, median, mode, and standard deviation, are employed in data analysis. It also includes inferential statistics like correlation and ANOVA, as well as more traditional methods like regression analysis. The purpose of data analysis is to derive conclusions from data, establish relationships between data elements, and predict future trends. Data cleaning, or the removal of duplicate or incorrect entries from a dataset, is another part of data analysis. Data cleaning is essential for getting accurate results. Another crucial component of data analysis is data visualisation, which provides a visual representation of data to aid in its interpretation and comprehension (Sheard, 2018).

Microsoft Excel and the Statistical Package for the Social Sciences (SPSS) were used in the data analysis. In order to find significant patterns and correlations in huge datasets, quantitative data analysis using Excel and SPSS relied on statistical methodologies. Data were analysed in this way so that better judgments could be made and predictive models could be developed. Researchers may simply and swiftly modify, display, and analyze data with the use of MS. Excel and SPSS. Although SPSS is utilized for more advanced statistical studies,

Microsoft Excel is helpful for basic data processing and computations. Data analysis is simplified by the built-in formulae, charting tools, and data visualisation elements included in both systems (Cleff, 2019).

3.6.1 Summary Statistics

The quantitative research technique of descriptive statistics is used to summarize, organize, and interpret data. The purpose of descriptive statistics is to provide an overview of a data set. They are used for the purpose of characterizing the sample in terms of its central tendency (mean, median, and mode), as well as its dispersion (standard deviation, variance, range, and quartiles). Data sets with a large number of individual observations may be summarized and shown graphically using descriptive statistics. Data interpretation, population comparison, and hypothesis testing were all aided by this kind of statistical analysis. Descriptive statistics are used to find trends in data and learn about the distribution of an attribute or measure of a central tendency within a population. The link between income and education is one example of a relationship that may be analysed using this method. A data set's variability may be examined using descriptive statistics, and outliers or groups with unique features can be singled out. Descriptive statistics, in the end, are a potent tool for gaining insight from data. In order to forecast future events and create comparisons across groups, descriptive statistics are utilised (Cleff, 2019).

3.6.2 Cronbach's alpha

The internal consistency or dependability of a research instrument may be quantified using Cronbach's Alpha. The higher the correlation, the more likely it is that the elements in a collection are measuring the same underlying concept. Cronbach's Alpha is the average correlation between each individual item on a scale and the total score. The value may be either 0 (indicating a complete lack of consistency) or 1 (indicating perfect

dependability). In the realm of scientific inquiry, values above .70 are often accepted. Cronbach's Alpha was used to determine whether or not a survey or test was reliable. Cronbach's Alpha is a measure of the reliability of an assessment tool, and if it is too low, it might mean that the items being used are not all assessing the same construct. Cronbach's Alpha is often used as a reliability indicator in scientific studies. Validity and reliability of findings were ensured by ensuring that surveys and tests accurately measured the targeted construct (Bujang, Omar et al., 2018).

3.6.3 Multivariate analysis

Multivariate analysis is a sort of statistical analysis that examines the correlations between many different factors. In this study, it is used to examine the interplay between several factors in a complex system, so revealing relationships and patterns that would not have been apparent from a more narrow focus. In addition, it was used to find correlations between categories of data that would have been otherwise impossible to identify. Multivariate analysis was used in studies to forecast future results and identify the impact of several factors. As a result of using multivariate analysis, researchers were able to better comprehend the interplay between the various variables and so pinpoint and fix any issues that may have been lurking in the background (Denis, 2020).

Principal component analysis (PCA) is a mathematical technique for simplifying complex data by identifying the fewest number of factors that best describe the remaining complexity. Exploratory data analysis often uses PCA, a dimensionality reduction approach, to spot trends, display information, and zero in on key variables. In order to improve computing efficiency and decrease the complexity of data analysis, PCS is often used to minimize the dimensionality of data sets discovered and to get significant insights from the data. Clustering is only one example of a machine-learning approach that uses PCA to reduce the number of variables

and improve model accuracy (Denis, 2020). The underlying correlations between several variables were discovered with the use of a mathematical technique called factor analysis. It is implemented to isolate a handful of variables that best account for the observed variation. To better understand the connections between the observable variables, we've developed a collection of latent variables called "factors." In factor analysis, the unobservable latent variables are referred to as factors (Denis, 2020).

3.6.4 Correlation and Regression Analysis

This study used the statistical technique of correlation analysis to measure the strength of a connection between three or more factors. It is used to evaluate the statistical significance of the results and to ascertain the strength and direction of any relationships between the variables. The purpose of correlation analysis is to establish and assess trends, correlations, and causality between variables. Hypothesis testing, comparison of treatment groups, and investigation of the influence of various variables on outcomes all rely on it. Several different types of data, including time series data, categorical data, and continuous numerical data, are subjected to correlation analysis. Pearson's correlation coefficient is the standard for determining the degree of a direct association between two variables (Pal & Bharati, 2019).

In order to investigate the associations between the study's dependent variable and the study's independent variables, regression analysis was used. Based on the values of the independent variables enabled the researcher to make predictions about the value of the determined variable. The purpose of a regression analysis is to find a mathematical model that best fits the data and adequately reflects the connections between the variables of interest. The dependent variable was the focus of the model used to make predictions about the independent variables. The model is used to make predictions about the strength and direction of associations between variables and to spot trends and patterns in the data (Pal & Bharati, 2019).

3.7 Research Validation

The survey's validity is checked throughout development to make sure it measures the right things and that the questions are clear and objective. This study verified the survey's validity with academics before giving it to the study's subjects. This procedure assisted in identifying faults with the survey, such as muddled questions or improper formatting, prior to its distribution. The survey's validity was checked by having a panel of three academic professionals go through it and provide input. These professors checked that the survey was properly designed and that it achieved its aims. Three academic experts gave broad suggestions, and a lot of responses helped establish the survey's credibility and accuracy (Orpana et al., 2019).

3.8 Research Ethics

This research work considerably contemplated the ethical considerations that need to be taken into account in order to carry out this research project. Participants' identities and other information gathered during this study were kept completely private. The subjects of the investigation gave their informed consent to the researcher, and the researcher only considered individuals who had agreed to take part in the research. The participants in the study were given instructions that were succinct and clear, including the goals and purposes of the research as well as the participants' individual contributions. The researcher also guaranteed that the information gathered throughout the course of this investigation was not disclosed to any third party. In addition, the researcher made certain that only dependable and legitimate sources of information were utilized and that each participant was accorded the utmost respect throughout the process.

CHAPTER IV

DATA ANALYSIS AND RESULTS

This research work is related to finding the impact of cloud services on the quality of work performance in the real estate sector. This research work is based on primary data analysis, and the data has been collected by using the online survey method. Data was gathered from the 100 stakeholders directly related to the estate sector. Random sampling was employed to target the participants of the study. Microsoft Excel and SPSS have been employed for the data analysis by applying various statistical statistics, including descriptive analysis, factor analysis, correlational, and regression analysis. The observed variables have been employed to measure the latent variables of the research, such as the 15 observed variables that have been utilized to measure the latent variable of customer loyalty. Data have been analyzed through the IBM SPSS-26, and the outcomes of the analysis have been represented in this chapter.

4.1 Demographic Analysis

The results of the demographic analysis have presented below, extracted with the help of frequency and percentage analysis by using MS-Excel 16.

Table 1: Age of the Participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. 18-28 Years	12	12.0	12.0	12.0
	2. 29-39 Years	43	43.0	43.0	55.0
	3. 40-50 Years	33	33.0	33.0	88.0
	4. More than 50 Years	12	12.0	12.0	100.0
	Total	100	100.0	100.0	

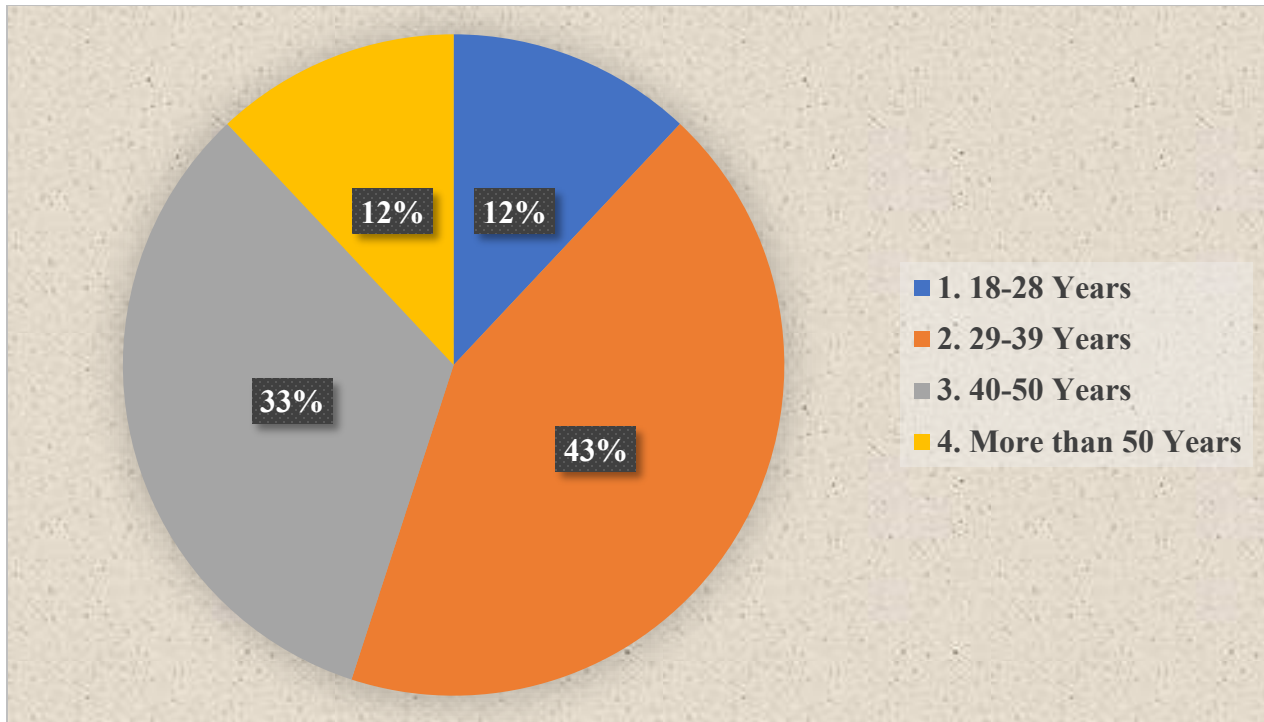


Figure 2: Age of the Participants

The above-mentioned Figure 2 and Table 1 indicate the results extracted based on the demographic questions asked of the participants. The above figure shows the share of the age of participants, and it has been indicated that 12% of the participants belong to the 18-28 years, while 43% of the participants belong to the 29-29 years of age group. In addition, 33% of the participants belong to the 40-50 years, and 12% belong to more than 50 years of age.

Table 2: Gender of the Participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	1.0	1.0	1.0
	1. Male	94	94.0	93.0	94.0
	2. Female	6	6.0	6.0	100.0
	Total	100	100.0	100.0	

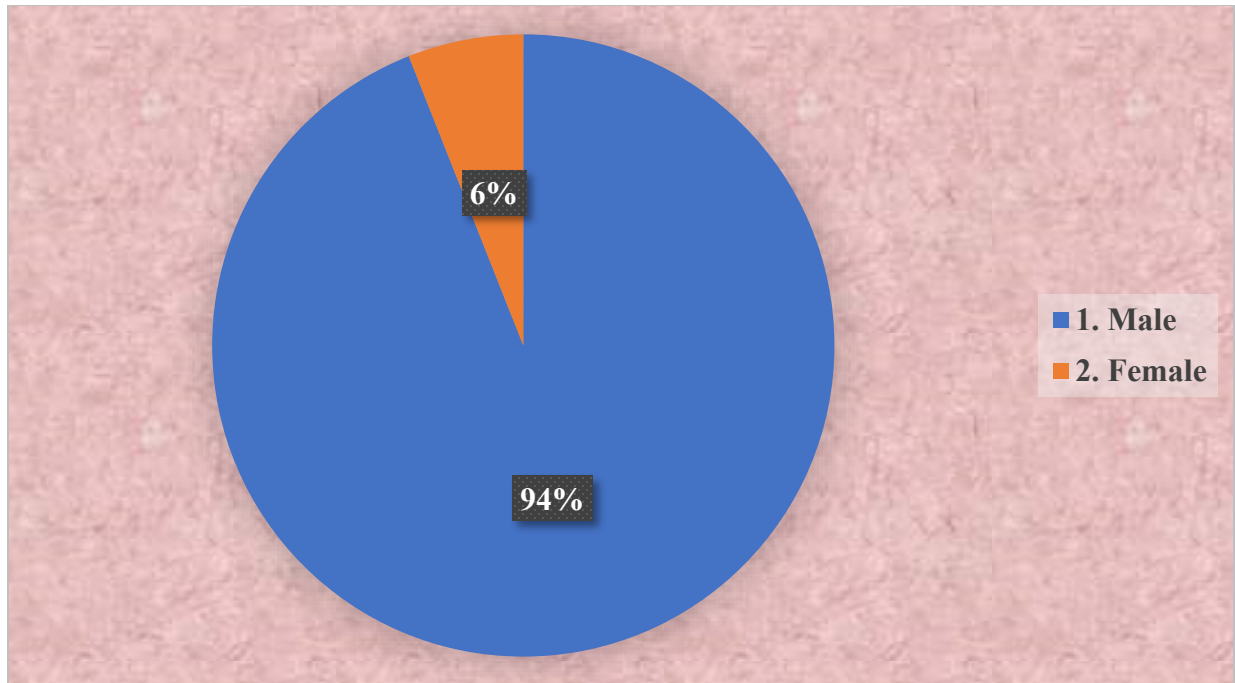


Figure 3: Gender of the Participants

The above-mentioned Figure 3 and Table 2 indicate the results extracted based on the demographic questions asked of the participants. The above figure shows the share of the gender of participants, 94% of the participants are males, and 6% are females.

Table 3: Education of the Participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1. High School or Below	4	4.0	4.0	4.0
	2. Bachelor's Degree	61	61.0	61.0	65.0
	3. Master's Degree	34	34.0	34.0	99.0
	4. Doctoral Degree	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

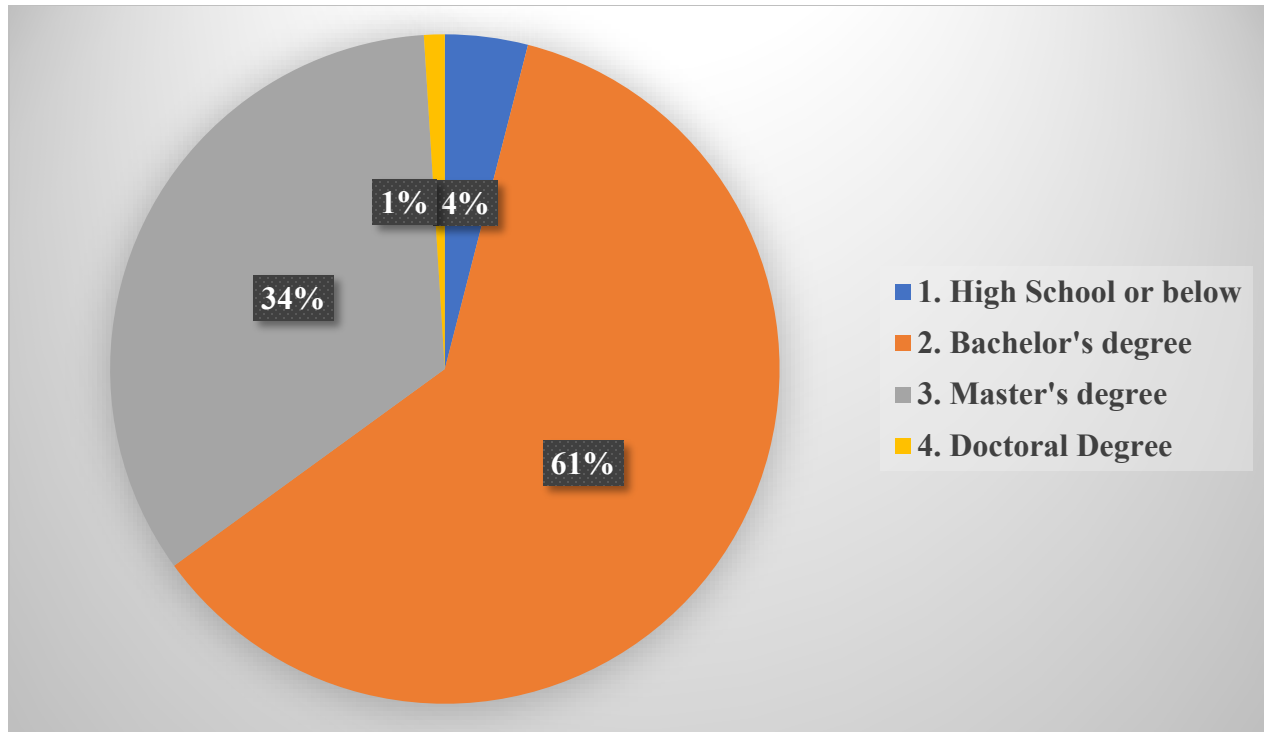


Figure 4: Education of the Participants

The above Figure 4 and Table-3 show the participation of the participants as per their level of education, and the results indicate that 4% of the participants have a high school degree, 61% have a bachelor's degree, 34% have a master's degree, and 1% have the doctoral degree.

Table 4: How long Participants Working in the Real Estate Sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	1.0	1.0	1.0
	1. Less than 1 year	20	20.0	20.0	21.0
	2. 1-5 years	16	16.0	16.0	37.0
	3. 5-10 years	31	31.0	31.0	68.0
	4. More than 10 years	32	32.0	32.0	100.0
	Total	100	100.0	100.0	

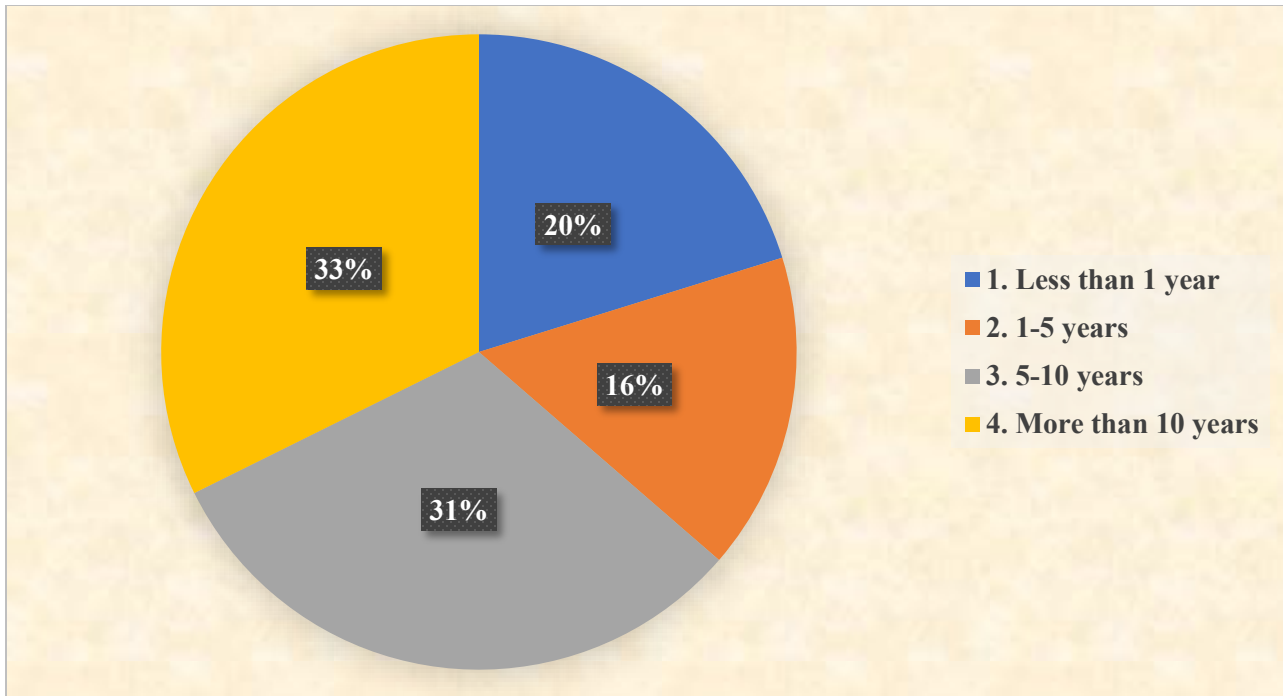


Figure 5: How long Participants Working in the Real Estate Sector

The above Figure-5 and Table-4 indicate the working experience of the participants in the real estate sector. The results show that 20% of participants have less than 1 year of experience, 16% of participants have 1 to 5 years of experience, 31% of participants have 5 to 10 years of experience, and 33% of participants have more than 10 years of working experience in the real estate sector.

4.1. Frequency and Percentage Analysis of Observed Variables of Cloud Services Adoption

Table 5: Frequency and Percentage Analysis of Observed Variables of Cloud Services Adoption (1-4 Observed Variables)

	The use of cloud services has made it easier to access and share documents among team members.	Cloud services have improved our ability to work remotely and collaborate with colleagues.	Adopting cloud computing increases the rate of customer retention.	Cloud services have reduced the amount of time spent on administrative tasks such as data entry.
Strongly Disagree	4	2	2	3
Disagree	1	1	1	1
Neutral	22	11	23	10
Agree	37	44	43	51
Strongly Agree	36	42	31	35

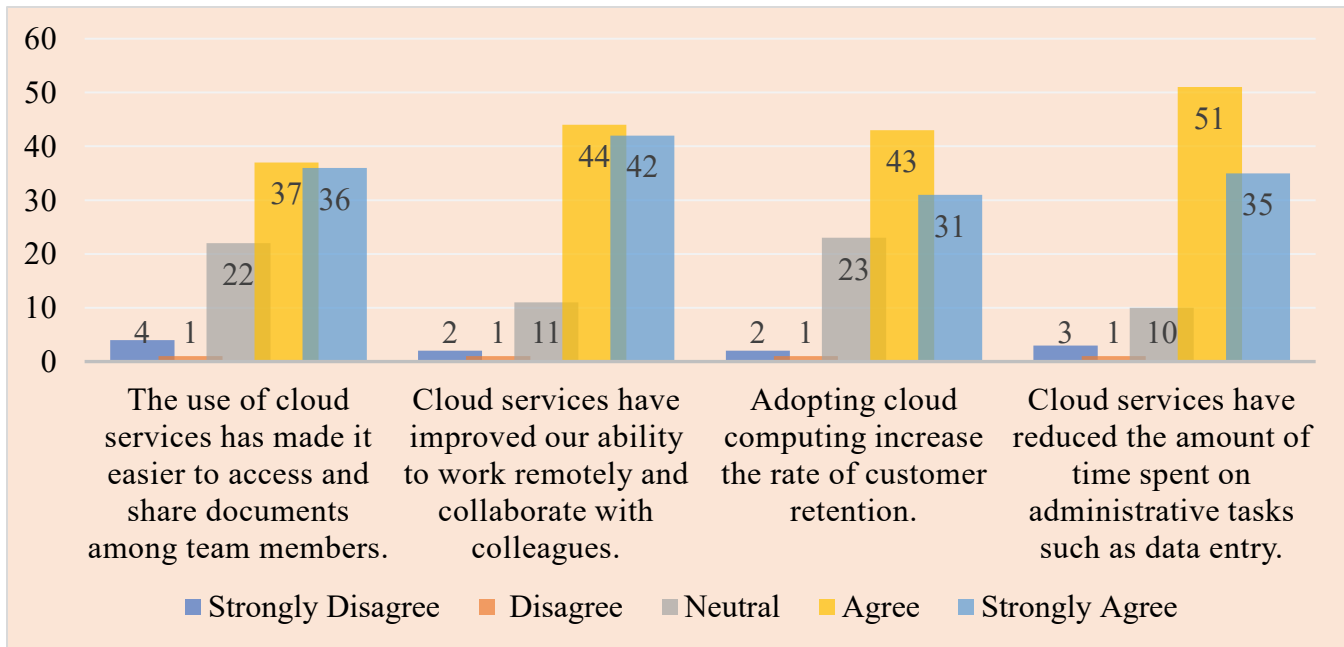


Figure 6: Frequency and Percentage Analysis of Observed Variables of Cloud Services Adoption (1-4 Observed Variables)

The results of the above Table-5 and Figure 6 indicated that the majority of the participants strongly agreed with the statements. This indicates that cloud services positively enhance the accessibility and exchange of documents and also improve remote work and collaboration in the real estate sector. On the other hand, 55% of the participants marked agreed that cloud services increase collaboration with the partners remotely. At the same time, 43% of participants agreed that adopting cloud services increases customer retention. Statement four shows that 51% of participants agreed that cloud services reduce the time spent on administrative tasks in the real estate sector.

Table 6: Frequency and Percentage Analysis of Observed Variables of Cloud Services Adoption (5-8 Observed Variables)

Cloud services give competitive	computing	The cost savings associated with cloud services have	The ease of use of cloud services has increased	Cloud services have improved our ability to communicate with clients and stakeholders.
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	advantages to your company.	positively impacted our real-estate business.	productivity among team members.	
Strongly Disagree	4	2	2	3
Disagree	0	0	0	1
Neutral	14	17	14	14
Agree	47	39	47	46
Strongly Agree	35	42	37	36

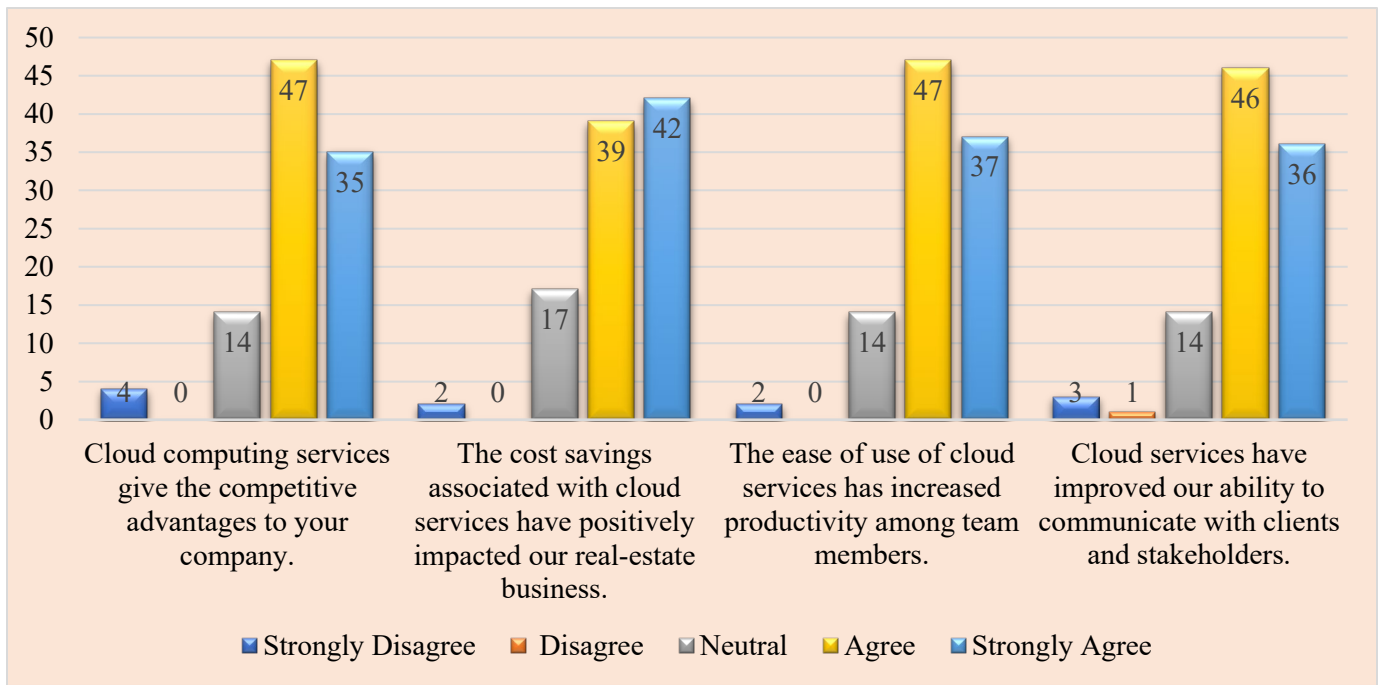


Figure 7: Frequency and Percentage Analysis of Observed Variables of Cloud Services Adoption (5-8 Observed Variables)

The results of the above Table-6 and Figure 7 indicate that the majority of the participants strongly agreed with the statements, which indicates that cloud services positively offer a competitive edge to the firms in the context of real estate sectors. The above figure shows that 47% of participants agreed that using cloud services provides a competitive advantage to the company. At the same time, 42% of participants strongly agreed that using cloud services in the real estate sector helps in cost savings. Likewise, 47% of participants

agreed that cloud services boosted the productivity of the team members. In addition, 46% of participants agreed that cloud services enhance the ability to communicate with stakeholders and clients positively.

4.2. Frequency and Percentage Analysis of Observed Variables of Quality of Work Performance

Table 7: Frequency and Percentage Analysis of Observed Variables of Quality of Work Performance (1-4

Observed Variables)				
	The use of cloud services has improved the overall quality of work performance in my organization in the real-estate sector.	The use of cloud services has increased the speed and efficiency of completing tasks in my organization.	The use of cloud services has increased collaboration and teamwork among team members of my organization in the real-estate sector.	The use of cloud services has increased the accuracy and quality of work output of my organization in the real-estate sector.
Strongly Disagree	3	4	4	3
Disagree	5	3	1	1
Neutral	11	12	7	11
Agree	45	49	43	52
Strongly Agree	35	32	45	33

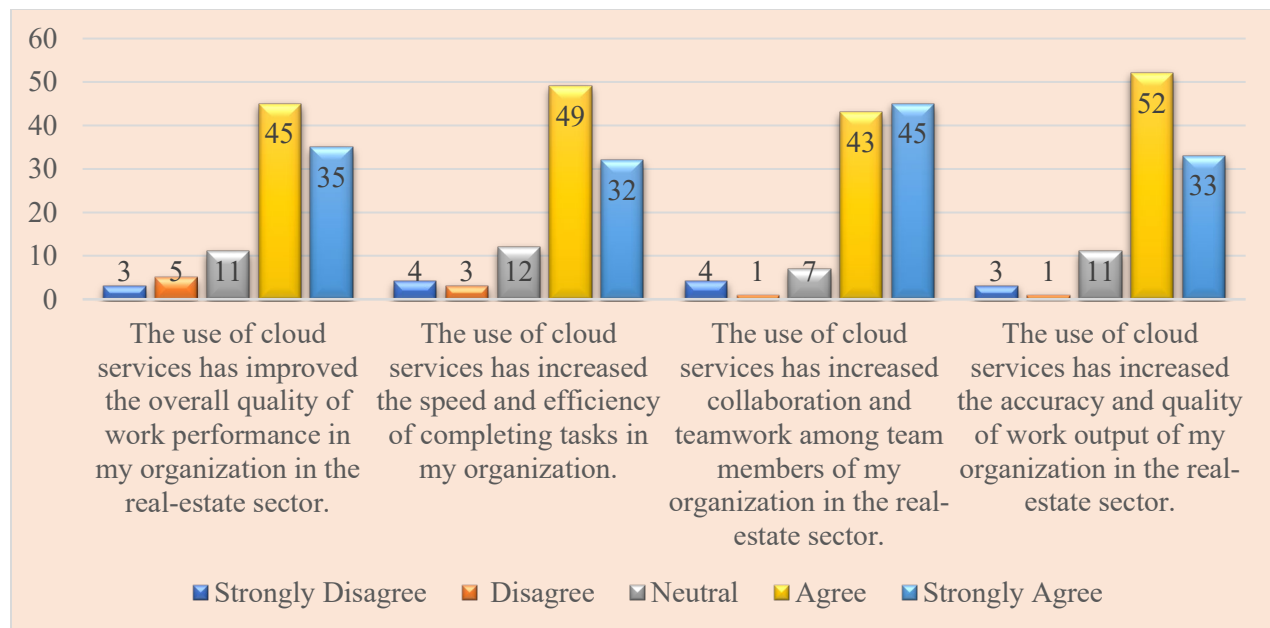


Figure 8: Frequency and Percentage Analysis of Observed Variables of Quality of Work Performance (1-4

Observed Variables

The above table and Figure 7 shows that the majority of the participants agreed with the statements. 45% of participants agreed that cloud services enhanced the real-estate quality of work performance. 49% agreed that cloud services enhanced the efficiency and speed of tasks. Moreover, 45% of participants agreed that cloud services had increased collaboration among the members of real;-estate organizations. In addition, 52% of participants agreed that cloud services had increased the accuracy and quality of work output in the real estate sector. The results indicate that the incorporation of cloud services in the real-estate sector positively increases productivity and quality of work performance.

Table 8: Frequency and Percentage Analysis of Observed Variables of Quality of Work Performance (5-7

Observed Variables)

	The use of cloud services has improved the level of customer satisfaction in my organization in the real-estate sector.	The use of cloud services has positively impacted the overall competitiveness of my organization in the real estate sector.	The use of cloud services has improved the work-life balance of team members in my organization in the real-estate sector.
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Strongly Disagree	3	4	4
Disagree	0	2	4
Neutral	13	12	10
Agree	47	43	44
Strongly Agree	37	39	38

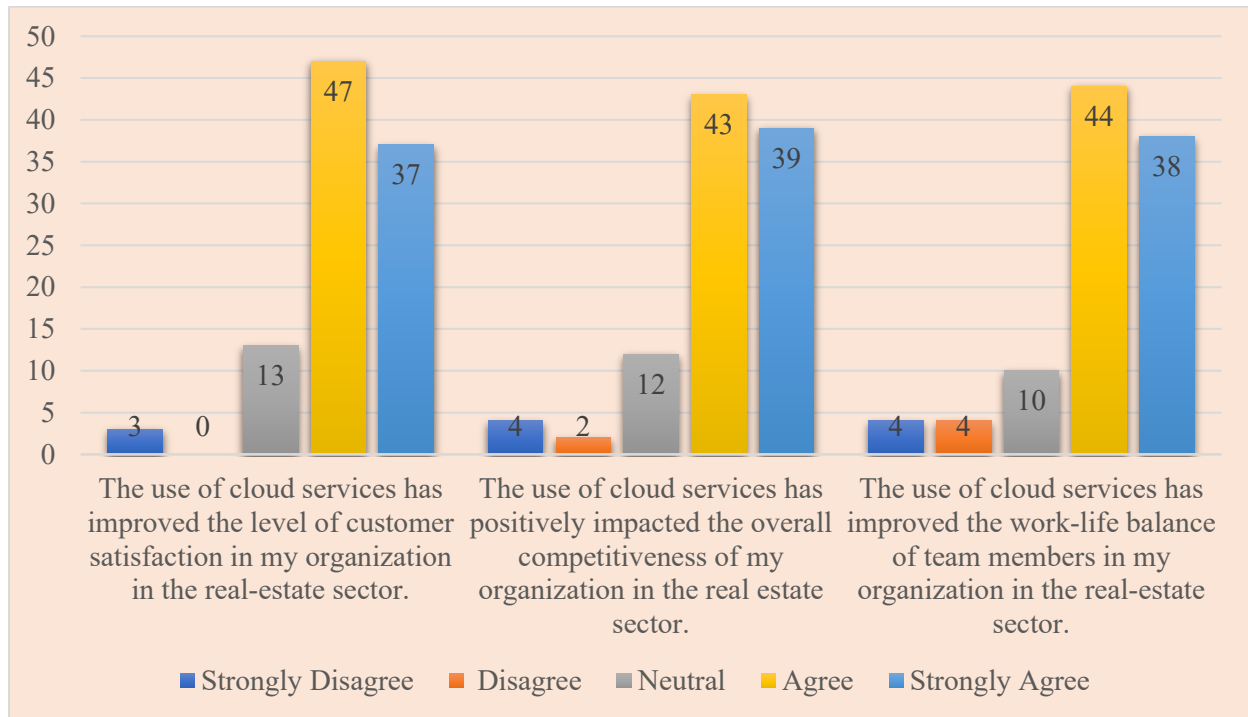


Figure 9: Frequency and Percentage Analysis of Observed Variables of Quality of Work Performance (5-7 Observed Variables)

The above Figure-9 indicates the results of participants' responses on the last three observed variables of quality of work performance that were measured directly through the questionnaire. The findings indicate that a large share of the participants agreed and strongly agreed with the statement of the use of cloud services has enhanced the level of customer satisfaction in the organization where they work in the real estate sector. It means that cloud services help to increase the satisfaction level of customers. On the other hand, most respondents also agree and strongly agree that cloud services have a positive and significant on the

competitiveness within and between the organizations associated with the real estate sector. Moreover, higher numbers of participants, as far as the total participants of the study are concerned, say that the cloud services used in the real estate organization also play a key role in improving the work-life balance. So, the overall results mentioned in the above figure state that cloud services have improved the quality of work performance when we talk about the real estate sector of the economy.

4.3. Summary Statistics of Observed Variables of Cloud Services

Adoption

The summary statistics are utilized to sum up the variables, and data are summarized in the form of the mean and standard deviation.

Table 9: Summary Statistics of Observed Variables of Cloud Services Adoption

	N	Mean	Std. Deviation	Variance	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
1. The use of cloud services has made it easier to access and share documents among team members.	100	4.00	.995	.990	1.266	.478
2. Cloud services have improved our ability to work remotely and collaborate with colleagues.	100	4.23	.839	.704	3.021	.478
3. Adopting cloud computing increases the rate of customer retention.	100	4.00	.876	.768	1.132	.478

4. Cloud services have reduced the amount of time spent on administrative tasks such as data entry.	100	4.14	.865	.748	3.597	.478
5. Cloud computing services give competitive advantages to your company.	100	4.09	.922	.850	2.968	.478
6. The cost savings associated with cloud services have positively impacted our real-estate business.	100	4.19	.861	.741	1.971	.478
7. The ease of use of cloud services has increased productivity among team members.	100	4.17	.817	.668	2.822	.478
8. Cloud services have improved our ability to communicate with clients and stakeholders.	100	4.11	.898	.806	2.596	.478
Valid N (listwise)	100					

The descriptive statistics of the cloud services adoption variables illustrate that most of the research participants agree with the statements mentioned above because the value of the mean is highly close to the five values, which shows that the option of agreeing has appeared and is marked more than other given options. At the same time, the value of the standard deviation shows that the data is scattered from the value of the mean.

4.4. Summary Statistics of Observed Variables of Quality of Work Performance

Table 10: Summary Statistics of Observed Variables of Quality of Work Performance

	N	Mean	Std. Deviation	Variance	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
1. The use of cloud services has improved the overall quality of work performance in my organization in the real-estate sector.	100	3.90	1.064	1.133	1.281	.481
2. The use of cloud services has increased the speed and efficiency of completing tasks in my organization.	100	4.02	.964	.929	2.195	.478
3. The use of cloud services has increased collaboration and teamwork among team members of my organization in the real-estate sector.	100	4.24	.933	.871	3.946	.478
4. The use of cloud services has increased the accuracy and quality of work output of my organization in the real-estate sector.	100	4.11	.863	.745	3.434	.478
5. The use of cloud services has improved the level of customer satisfaction in my organization in the real-estate sector.	100	4.15	.869	.755	3.259	.478
6. The use of cloud services has positively impacted the overall competitiveness of my organization in the real estate sector.	100	4.13	.955	.911	2.748	.481
7. The use of cloud services has improved the work-life balance of team members in my organization in the real-estate sector.	100	3.99	.969	.939	2.502	.478
Valid N (listwise)	100					

The descriptive statistics of the quality of work performance variables illustrate that most of the research participants agree with the statements mentioned above because the value of the mean is highly close to the five values, which shows that the option of agreeing has appeared and is marked more than other given

options. At the same time, the value of the standard deviation shows that the data is scattered from the value of the mean.

4.5. Extraction of Latent Variable of Cloud Services Adoption

The multivariate technique is employed for the retrieval of the latent variables, and in this following section, the latent variables of cloud services adoption and quality of work performance are selected and represented.

Table 11: Results of Cronbach's Alpha (Cloud Services Adoption)

Reliability Statistics	
Cronbach's Alpha	N of Items
.898	8

The Cronbach's Alpha's value shows that all the eight variables of the cloud services adoption are reliable internally and are moving in the same direction. The value of the reliability test or alpha coefficient is greater than 0.7, which indicates that the factor analysis is applicable to the analysis. The value of alpha shows that the observed variables are closely associated with each other as far as the positive correlation is concerned. It means the observed factors are internally consistent with each other, and they move in one direction for the extraction of one latent variable. It further indicates that all the eight observed contributed positively towards each other, and they are suitable to make one latent variable that represents all these variables significantly.

Table 12: Results of Principal Component Analysis (Total Variance Explained in Cloud Services Adoption by Observed Variables)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.687	58.590	58.590	4.687	58.590	58.590
2	.755	9.443	68.032			
3	.649	8.115	76.148			
4	.512	6.395	82.543			
5	.458	5.721	88.265			
6	.360	4.503	92.768			
7	.326	4.074	96.841			
8	.253	3.159	100.000			
Extraction Method: Principal Component Analysis.						

The table of total variance shows that cloud services adoption is measured with the aid of eight observed variables, and all the mentioned variables contribute significantly because the sums of squared loadings illustrated that all observed variables describe the variance in the latent variable. The first factor explained more variance in the latent factor as compared to the second factor, and the second factor examined more variance in the latent factor as compared to their factor. It stated that the increase in the number of factors leads to a decrease in the percentage of variance in the latent factor because every extra factor shows a small variance in the latent variable as compared to the previous one. The marginal variance in the latent factor is smaller than the previous one, and it shows first factors contribute more towards the latent variable.

Table 13: Results of Principal Component Analysis (Relationship between Cloud Services Adoption and Observed Variables)

Component Matrix	
	Component
	1
1. The use of cloud services has made it easier to access and share documents among team members.	.738
2. Cloud services have improved our ability to work remotely and collaborate with colleagues.	.764
3. Adopting cloud computing increases the rate of customer retention.	.680
4. Cloud services have reduced the amount of time spent on administrative tasks such as data entry.	.811
5. Cloud computing services give competitive advantages to your company.	.829
6. The cost savings associated with cloud services have positively impacted our real-estate business.	.728
7. The ease of use of cloud services has increased productivity among team members.	.740
8. Cloud services have improved our ability to communicate with clients and stakeholders.	.821
Extraction Method: Principal Component Analysis.	
a. 1 Component Extracted. (Cloud Services Adoption)	

The above-represented table of the coefficient matrix implies that the eight variables are utilized to measure the latent factor of cloud services adoption. The positive correlation between the observed variables and the latent variable suggests that the observed variables completely correspond to the latent variable. All the observed variables have been directly and significantly associated with the latent variable, which shows that the latent variable is completely representing all the observed variables and not a single variable moves in

a different direction. The observed factor 5 has a higher level of positive contribution towards the latent variable in comparison to all other observed factors because the value of correlation is higher than 0.7.

4.6. Extraction of Latent Variable of Quality of Work Performance

Table 14: Results of Cronbach Alpha (Quality of Work Performance)

Reliability Statistics	
Cronbach's Alpha	N of Items
.911	7

The value of Cronbach's Alpha shows that all the seven variables of the quality of work performance are reliable internally and are moving in the same direction. The value of the alpha coefficient is higher than 0.7, which signifies that the factor analysis is valid for the analysis. The value of alpha demonstrates that the observed variables are closely related to each other as far as the positive correlation is concerned. It means the observed factors are internally consistent with each other, and they move in one direction for the extraction of one latent variable. It further indicates that all the seven observed contributed positively towards each other, and they are suitable to make one latent variable that represents all these variables significantly.

Table 15: Results of Principal Component Analysis (Total Variance Explained in Quality of Work Performance by Observed Variables)

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.591	65.581	65.581	4.591	65.581	65.581
2	.634	9.053	74.634			
3	.544	7.775	82.409			

4	.417	5.956	88.365			
5	.337	4.809	93.174			
6	.269	3.844	97.018			
7	.209	2.982	100.000			
Extraction Method: Principal Component Analysis.						

The table of total variance shows that the quality of work performance is measured with the aid of eight observed variables, and all the mentioned variables contribute significantly because the sums of squared loadings illustrated that all observed variables describe the variance in the latent variable. The first factor explained more variance in the latent factor as compared to the second factor, and the second factor examined more variance in the latent factor as compared to their factor. It stated that the increase in the number of factors leads to a decrease in the percentage of variance in the latent factor because every extra factor shows a small variance in the latent variable as compared to the previous one. The marginal variance in the latent factor is smaller than the previous one, and it shows first factors contribute more towards the latent variable.

Table 16: Results of Principal Component Analysis (Relationship between Quality of Work Performance and Observed Variables)

Component Matrix	
	Component
	1
1. The use of cloud services has improved the overall quality of work performance in my organization in the real-estate sector.	.788
2. The use of cloud services has increased the speed and efficiency of completing tasks in my organization.	.817
3. The use of cloud services has increased collaboration and teamwork among team members of my organization in the real-estate sector.	.831
4. The use of cloud services has increased the accuracy and quality of work output of my organization in the real-estate sector.	.835

5. The use of cloud services has improved the level of customer satisfaction in my organization in the real-estate sector.	.811
6. The use of cloud services has positively impacted the overall competitiveness of my organization in the real estate sector.	.807
7. The use of cloud services has improved the work-life balance of team members in my organization in the real-estate sector.	.777
Extraction Method: Principal Component Analysis.	
a. 1 Component Extracted. (Quality of Work Performance)	

The above-represented table of the coefficient matrix implies that the seven variables are utilized to measure the latent factor of quality of work performance. The positive correlation between the observed variables and the latent variable suggests that the observed variables completely correspond to the latent variable. All the observed variables have been directly and significantly associated with the latent variable, which shows that the latent variable is completely representing all the observed variables and not a single variable moves in a different direction. The observed factor 4 has a higher level of positive contribution towards the latent variable in comparison to all other observed factors because the value of correlation is higher than 0.7.

4.7. Results of Correlation Analysis

Table 17: Results of the Pearson Correlation Test

Correlations			
		Quality of Work Performance	Cloud Services Adoption
Quality of Work Performance	Pearson Correlation	1	.803**
	Sig. (2-tailed)		.000
	N	100	100
Cloud Services Adoption	Pearson Correlation	.803**	1
	Sig. (2-tailed)	.000	
	N	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

The outcomes of the Pearson correlation indicate that the value of correlation is 0.803, which shows that quality of work performance and cloud services adoption is directly correlated with each other. It further indicates that the increase in cloud services also increases the quality of work performance.

4.8. Results of Regression Analysis

Table 18: Results of the ANOVA Test

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63.115	1	63.115	174.714	.000b
	Residual	34.680	96	.361		
	Total	97.795	97			
a. Dependent Variable: Quality of Work Performance						
b. Predictors: (Constant), Cloud Services Adoption						

The above-presented table of ANOVA shows that all the presented variables are significantly distinct from each other because the value of p is less than 0.05, which represents the significant differences between the groups of the mean of each variable.

Table 19: Results of Regression Analysis

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	-.015	.061		-.253	.801
	Cloud Services Adoption	.807	.061	.803	13.218	.000
a. Dependent Variable: Quality of Work Performance						

The outcomes of the above table represent that the independent variable of cloud services adoption is directly positively associated with the dependent variable of quality of work performance. The value of the p of independent variable cloud services adoption is less than 0.05, which shows 95% of acceptance of the alternative hypothesis of the research study, and it also represents that an increase in cloud services adoption increases the quality of work performance in the real estate sector.

All the hypotheses of this research work are accepted, which shows that the adoption of cloud services positively correlated with the quality of work performance in the real-estate sector. The p-value of cloud services adoption is 0.803, which shows that cloud services adoption is positively correlated and has a positive effect on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia.

CHAPTER V

DISCUSSION AND CONCLUSION

5.1 Discussion

This research work aimed to find the Impact of Cloud Services on the Quality of Work Performance in the Real Estate Sector of Riyadh, Saudi Arabia. The outcomes of the research relate and match with the findings of the previous research studies because multiple researchers represented the same findings of the study while several studies represented contradicting outcomes. The outcomes of the current work found that cloud services play a crucial role in increasing the quality of work performance. The previous study performed by Ghanem et al. (2021) demonstrated a very substantial positive correlation between cloud computing usage and business outcomes. Small and medium-sized businesses (SMEs) that used cloud computing saw gains in operational efficiency, financial savings, and adaptability. Improved overall performance was also a result of cloud computing's enhanced potential for collaborative work, data security, and scalability. Another research conducted by S. Alshahrani (2020) revealed that cloud computing has SMEs to become more productive, save money, and boost their adaptability. Significantly better performance was also a result of cloud computing's enhanced capacity for collaborative work, data protection, and adaptability. According to the results, using cloud computing services is crucial for Saudi SMEs to maintain growth and market share in the long run.

Musamali & Muchelule (2022) underlined that cloud computing practices have become increasingly relevant in improving the execution of real estate developments in Nairobi County, Kenya. The availability of cost-effective cloud-based solutions provided real estate projects with on-demand access to computing resources and storage. The most significant benefits of cloud computing practices were its ability to store and back up project data in a secure manner, and the use of cloud storage solutions like Google Drive, Microsoft

OneDrive, and Dropbox ensures that project data is safe and easily accessible to authorized stakeholders. Likewise, LAKHWANI et al. (2020) revealed that the use of cloud technology played a significant role in the process of making decisions based on collected data. Similarly, Baharuddin et al. (2021) revealed that businesses such as real estate professionals might be assisted in the processing and analysis of this data by using data visualisation platforms and cloud-based analytics tools. This provides real estate professionals with the actionable insights necessary to make educated choices.

In addition, Abdelaziz et al. (2018) stated that cloud computing has the potential to boost overall work performance by protecting the confidentiality and security of stored data. In the same way, Zbořil (2023) asserted that the use of cloud computing had had a revolutionary effect on a wide range of businesses, most notably in the areas of healthcare, banking, retail, and real estate. Businesses have been able to improve their operations, increase their capacity for cooperation, and make choices that are driven by data as a result of the availability of on-demand access to sophisticated computing resources and services. As a result, both productivity and efficiency have risen to cut costs and enhance the overall quality of work in all relevant industries.

Similarly, Gupta et al. (2022) also found a positive correlation between cloud technology adoption and firm performance. As a result of cloud computing's effective resource allocation, fast deployment, and decreased infrastructure costs, software development efficiency rose. Knowledge management approaches, like sharing and cooperation, improved problem-solving skills and sparked creativity. Organizations were able to expedite their software development processes and come up with novel solutions because of the complementary nature of cloud computing and knowledge management.

5.2. Conclusion

This research work is based on a quantitative approach and follows the descriptive research design. This research employed primary data analysis, and the data collection method was an online survey. A self-constructed questionnaire was used to collect data from the target population, following a broad review of the relevant literature. To collect the data, a Google form was used, and the participants were required to provide informed consent before participating. Only participants who willingly consent to participate will be considered for the study. An online link was generated and shared with the research participants to access the questionnaire. The collected data was examined using statistical software such as SPSS and MS Excel. SPSS, in the form of statistical packages, was used for data analysis, employing multiple techniques. MS Excel was utilized for data coding and cleaning to transform the data from qualitative to quantitative form. Data coding converted opinion-based data into a more comprehensible numerical form. Data cleaning removed irrelevant data and outliers from the collected dataset. The internal reliability of the data was measured using Cronbach's alpha, which measures the variables' direction towards the latent variable. Multivariate analysis techniques were employed to reduce the data's volume and size. Summary statistics were used to transform the data, while correlation and regression analysis was conducted to assess the relationship and impact between independent and dependent variables.

The outcomes of this research work indicated that the value of the p of independent variable cloud services adoption is less than 0.05, which shows 95% of acceptance of the alternative hypothesis of the research study, and it also represents an increase in cloud services adoption increases the quality of work performance in the real estate sector. All the hypotheses of this research work are accepted, which shows that the adoption of cloud services positively correlated with the quality of work performance in the real-estate sector. The p -value of cloud services adoption is 0.803, which shows that cloud services adoption is positively

correlated and has a positive effect on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia.

5.3 Limitations and Scope for Future Research

This research study is limited to the real estate sector in Riyadh, Saudi Arabia; therefore, the results may not be generalizable to other regions or sectors. This study may be limited by the timeframe available for data collection and analysis, which could impact the depth and breadth of the analysis. This study relied on self-reported data collected through surveys, which could be subject to social desirability bias and other response biases.

Based on the findings of the study examining the impact of cloud services on the quality of work performance in the real estate sector of Riyadh, Saudi Arabia, several recommendations and potential avenues for future research can be proposed. Based on the results of the study that looked at how cloud services affect the quality of work performance in the real estate industry in Riyadh, Saudi Arabia, a number of suggestions and possible directions for future research can be made. First, it is suggested that real estate companies in Riyadh implement cloud services to enhance their work efficiency. These businesses may boost their decision-making capabilities, customer service, and overall competitiveness by taking use of cloud computing's benefits, such as greater efficiency, data accessibility, and better collaboration.

Second, it is crucial to financing training and development programs for staff members that centre on making the most of cloud services. This will guarantee that staff members have the background they need to make the most of cloud computing and improve the company's bottom line. The long-term consequences of cloud service adoption in the real estate industry should be studied in future studies, with a focus on how it has influenced customer satisfaction, staff engagement, and financial success.

In addition, researchers could investigate the best practices for implementing cloud services in the real estate industry, such as identifying the most suitable cloud service providers, establishing data privacy and security protocols, and evaluating the most effective cloud-based applications that meet the industry's specific requirements. Comparing the adoption of cloud services in the real estate industry across regions and countries is an additional avenue for future investigation. This may provide light on the cultural, economic, and regulatory variables that affect the real estate industry's ability to take use of cloud services, as well as the sector's particular difficulties and potential. There is ample room for additional research in this field to better comprehend the advantages, difficulties, and best practices associated with cloud service adoption in the real estate industry.

REFERENCES

1. Abdelaziz, A., Elhoseny, M., Salama, A. S., & Riad, A. M. (2018). A machine learning model for improving healthcare services on cloud computing environment. *Measurement*, 119, 117–128. <https://doi.org/10.1016/j.measurement.2018.01.022>
2. Abdel-Basset, M., Mohamed, M., & Chang, V. (2018). NMCDA: A framework for evaluating cloud computing services. *Future Generation Computer Systems*, 86, 12–29. <https://doi.org/10.1016/j.future.2018.03.014>
3. Aceto, G., Persico, V., & Pescapé, A. (2020). Industry 4.0 and Health: Internet of Things, Big Data, and Cloud Computing for Healthcare 4.0. *Journal of Industrial Information Integration*, 18, 100129. <https://doi.org/10.1016/j.jii.2020.100129>
4. Adjei, J. K., Adams, S., & Mamattah, L. (2021). Cloud computing adoption in Ghana; accounting for institutional factors. *Technology in Society*, 65, 101583. <https://doi.org/10.1016/j.techsoc.2021.101583>
5. Ahmad, R., Nawaz, M. R., Ishaq, M. I., Khan, M. M., & Ashraf, H. A. (2023). Social exchange theory: Systematic review and future directions. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1015921>
6. Al Isma'ili, S., Li, M., Shen, J., & He, Q. (2016). Cloud computing adoption determinants: an analysis of Australian SMEs. *Faculty of Engineering and Information Sciences - Papers: Part A*, 1–17. <https://ro.uow.edu.au/eispapers/5826/>
7. Alharthi, A., Yahya, F., Walters, R. J., & Wills, G. B. (2015). An Overview of Cloud Services Adoption Challenges in Higher Education Institutions. *Proceedings of the 2nd International Workshop on Emerging Software as a Service and Analytics*. <https://doi.org/10.5220/0005529701020109>
8. Almaiah, M. A., & Al-Khasawneh, A. (2020). Investigating the main determinants of mobile cloud computing adoption in university campus. *Education and Information Technologies*, 25(4), 3087–3107. <https://doi.org/10.1007/s10639-020-10120-8>
9. Al-Samarraie, H., & Saeed, N. (2018). A systematic review of cloud computing tools for collaborative learning: Opportunities and challenges to the blended-learning environment. *Computers & Education*, 124, 77–91. <https://doi.org/10.1016/j.compedu.2018.05.016>

10. Alzakholi, O., Haji, L., Shukur, H., Zebari, R., Abas, S., & Sadeeq, M. (2020). Comparison Among Cloud Technologies and Cloud Performance. *Journal of Applied Science and Technology Trends*, 1(2), 40–47. <https://doi.org/10.38094/jastt1219>
11. Attaran, M. (2017). Cloud Computing Technology: Leveraging the Power of the Internet to Improve Business Performance. *Journal of International Technology and Information Management*, 26(1), 112–137. <https://scholarworks.lib.csusb.edu/jitim/vol26/iss1/6/>
12. Baharuddin, B., Ampera, D., Febriasari, H., Sembiring, M. A. R., & Hamid, A. (2021). Implementation of Cloud Computing System in Learning System Development in Engineering Education Study Program. *International Journal of Education in Mathematics, Science and Technology*, 9(4), 728–740. <https://doi.org/10.46328/ijemst.2114>
13. Bajdor, P. (2022). Perception and evaluation of selected cloud computing factors in the light of conducted research among small and medium-sized enterprises. *Procedia Computer Science*, 207, 3788–3797. <https://doi.org/10.1016/j.procs.2022.09.440>
14. Belle, J.-P. V., & Dyk, R. van. (2019). Factors Influencing the Intended Adoption of Digital Transformation: A South African Case Study. *Proceedings of the 2019 Federated Conference on Computer Science and Information Systems*. <https://doi.org/10.15439/2019f166>
15. Bello, S. A., Oyedele, L. O., Akinade, O. O., Bilal, M., Davila Delgado, J. M., Akanbi, L. A., Ajayi, A. O., & Owolabi, H. A. (2020). Cloud computing in construction industry: Use cases, benefits and challenges. *Automation in Construction*, 122, 103441. [sciencedirect. https://doi.org/10.1016/j.autcon.2020.103441](https://doi.org/10.1016/j.autcon.2020.103441)
16. Borangiu, T., Trentesaux, D., Thomas, A., Leitão, P., & Barata, J. (2019). Digital transformation of manufacturing through cloud services and resource virtualization. *Computers in Industry*, 108, 150–162. <https://doi.org/10.1016/j.compind.2019.01.006>
17. Caldarelli, A., Ferri, L., & Maffei, M. (2016). Expected benefits and perceived risks of cloud computing: an investigation within an Italian setting. *Technology Analysis & Strategic Management*, 29(2), 167–180. <https://doi.org/10.1080/09537325.2016.1210786>
18. Cetindamar, D., Abedin, B., & Shirahada, K. (2021). The Role of Employees in Digital Transformation: A Preliminary Study on How Employees' Digital Literacy Impacts Use of Digital Technologies. *IEEE Transactions on Engineering Management*, 1–12. <https://doi.org/10.1109/tem.2021.3087724>

19. Chang, V., & Ramachandran, M. (2016). Towards Achieving Data Security with the Cloud Computing Adoption Framework. *IEEE Transactions on Services Computing*, 9(1), 138–151. <https://doi.org/10.1109/tsc.2015.2491281>
20. Chen, X., Guo, M., & Shangguan, W. (2022). Estimating the impact of cloud computing on firm performance: An empirical investigation of listed firms. *Information & Management*, 59(3), 103603. <https://doi.org/10.1016/j.im.2022.103603>
21. Davis, G. F., & DeWitt, T. (2021). Organization Theory and the Resource-Based View of the Firm: The Great Divide. *Journal of Management*, 47(7), 014920632098265. sagepub. <https://doi.org/10.1177/0149206320982650>
22. Dincă, V. M., Dima, A. M., & Rozsa, Z. (2019). DETERMINANTS OF CLOUD COMPUTING ADOPTION BY ROMANIAN SMES IN THE DIGITAL ECONOMY. *Journal of Business Economics and Management*, 20(4), 798–820. <https://doi.org/10.3846/jbem.2019.9856>
23. Dincă, V. M., Dima, A. M., & Rozsa, Z. (2019). DETERMINANTS OF CLOUD COMPUTING ADOPTION BY ROMANIAN SMES IN THE DIGITAL ECONOMY. *Journal of Business Economics and Management*, 20(4), 798–820. <https://doi.org/10.3846/jbem.2019.9856>
24. Dr. Sunil Joshi, S. T., Shashank Bharadwaj,. (2021). A Study of Impact of Cloud Computing and Artificial Intelligence on Banking Services, Profitability and Operational Benefits. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(6), 1617–1627. <https://doi.org/10.17762/turcomat.v12i6.3198>
25. Duan, Y., Fu, G., Zhou, N., Sun, X., Narendra, N. C., & Hu, B. (2015). Everything as a Service (XaaS) on the Cloud: Origins, Current and Future Trends. *2015 IEEE 8th International Conference on Cloud Computing*. <https://doi.org/10.1109/cloud.2015.88>
26. El-Gazzar, R., Hustad, E., & Olsen, D. H. (2016). Understanding cloud computing adoption issues: A Delphi study approach. *Journal of Systems and Software*, 118, 64–84. <https://doi.org/10.1016/j.jss.2016.04.061>
27. Fraihat, S., Salameh, W. A., Elhassan, A., Tahoun, B. A., & Asasfeh, M. (2021). Business Intelligence Framework Design and Implementation: A Real-estate Market Case Study. *Journal of Data and Information Quality*, 13(2), 1–16. <https://doi.org/10.1145/3422669>

28. Gangwar, H., Date, H., & Ramaswamy, R. (2015). Developing a Cloud-Computing Adoption Framework. *Global Business Review*, 16(4), 632–651. <https://doi.org/10.1177/0972150915581108>
29. Garg, S. K., Versteeg, S., & Buyya, R. (2018). A framework for ranking of cloud computing services. *Future Generation Computer Systems*, 29(4), 1012–1023. <https://doi.org/10.1016/j.future.2012.06.006>
30. Georgakopoulos, D., Jayaraman, P. P., Fazia, M., Villari, M., & Ranjan, R. (2016). Internet of Things and Edge Cloud Computing Roadmap for Manufacturing. *IEEE Cloud Computing*, 3(4), 66–73. <https://doi.org/10.1109/mcc.2016.91>
31. Ghanem, S., Alshahrani, S., & Arabia, S. (2021). The Effect of Cloud Computing Adoption on Organizational Performance of SMEs in Saudi Arabia. *International Journal of Contemporary Management and Information Technology (IJCMIT)*, 1(2), 1–6. <https://ijcmit.com/wp-content/uploads/2020/12/ALSHAHHRANI-2021.pdf>
32. Golightly, L., Chang, V., Xu, Q. A., Gao, X., & Liu, B. S. (2022). Adoption of cloud computing as innovation in the organization. *International Journal of Engineering Business Management*, 14, 184797902210939. sagepub. <https://doi.org/10.1177/18479790221093992>
33. Gupta, C., Fernandez-Crehuet, J. M., & Gupta, V. (2022). Measuring Impact of Cloud Computing and Knowledge Management in Software Development and Innovation. *Systems*, 10(5), 151. <https://doi.org/10.3390/systems10050151>
34. Gupta, S., Meissonier, R., Drave, V. A., & Roubaud, D. (2020). Examining the impact of Cloud ERP on sustainable performance: A dynamic capability view. *International Journal of Information Management*, 51, 102028. <https://doi.org/10.1016/j.ijinfomgt.2019.10.013>
35. Ho, S. M., Ocasio-Velázquez, M., & Booth, C. (2017). Trust or consequences? Causal effects of perceived risk and subjective norms on cloud technology adoption. *Computers & Security*, 70, 581–595. <https://doi.org/10.1016/j.cose.2017.08.004>
36. Hsu, C.-L., & Lin, J. C.-C. (2015). Factors affecting the adoption of cloud services in enterprises. *Information Systems and E-Business Management*, 14(4), 791–822. <https://doi.org/10.1007/s10257-015-0300-9>
37. Isensee, C., Teuteberg, F., Griesse, K.-M., & Topi, C. (2020). The relationship between organizational culture, sustainability, and digitalization in SMEs: A systematic review.

Journal of Cleaner Production, 275(1), 122944.
<https://doi.org/10.1016/j.jclepro.2020.122944>

38. Jin, W., & McElheran, K. (2017, December 15). *Economies Before Scale: Survival and Performance of Young Plants in the Age of Cloud Computing*. Papers.ssrn.com. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3112901
39. JK, M., & MZ, B. (2021). Potentials of information and communication technology in real estate management and valuation practice. *Discovery Scientific Society*, 57(301). https://www.researchgate.net/profile/Jibrin-Mohammed/publication/349637387_Potentials_of_information_and_communication_technology_in_real_estate_management_and_valuation_practice/links/603922e992851c4ed59d5948/Potentials-of-information-and-communication-technology-in-real-estate-management-and-valuation-practice.pdf
40. Jonas, E., Schleier-Smith, J., Sreekanti, V., Tsai, C.-C., Khandelwal, A., Pu, Q., Shankar, V., Carreira, J., Krauth, K., Yadwadkar, N., Gonzalez, J. E., Popa, R. A., Stoica, I., & Patterson, D. A. (2019). Cloud Programming Simplified: A Berkeley View on Serverless Computing. *ArXiv:1902.03383 [Cs]*. <https://arxiv.org/abs/1902.03383>
41. Kaur, T., & Solomon, P. (2021). A study on automated property management in commercial real estate: a case of India. *Property Management, ahead-of-print*(ahead-of-print). <https://doi.org/10.1108/pm-05-2021-0031>
42. Kerravala, Z., & Michels, D. (2015). *Business Agility Drives the Need for Workstream Communications and Collaboration*. <https://talkingpointz.com/wp-content/uploads/2015/08/WorkstreamCC.pdf>
43. Khayer, A., Talukder, Md. S., Bao, Y., & Hossain, Md. N. (2020). Cloud computing adoption and its impact on SMEs' performance for cloud supported operations: A dual-stage analytical approach. *Technology in Society*, 60, 101225. <https://doi.org/10.1016/j.techsoc.2019.101225>
44. Kim, J. (2015). Survey for Sensor-Cloud System from Business Process Outsourcing Perspective. *International Journal of Distributed Sensor Networks*, 11(9), 917028. <https://doi.org/10.1155/2015/917028>
45. Kollolu, R. (2020, December 24). *Infrastructural Constraints of Cloud Computing*. Papers.ssrn.com. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3912456
46. LAKHWANI, M., DASTANE, O., SATAR, N. S. M., & JOHARI, Z. (2020). The Impact of Technology Adoption on Organizational Productivity. *Journal of Industrial Distribution & Business*, 11(4), 7–18. <https://doi.org/10.13106/jidb.2020.vol11.no4.7>

47. Langmead, B., & Nellore, A. (2018). Cloud computing for genomic data analysis and collaboration. *Nature Reviews Genetics*, 19(4), 208–219. <https://doi.org/10.1038/nrg.2017.113>
48. Mahmood, Z., & Ramachandran, M. (2018). Fog Computing: Concepts, Principles and Related Paradigms. *Fog Computing*, 3–21. https://doi.org/10.1007/978-3-319-94890-4_1
49. Maina, C. N. (2017). Effect of digital marketing tools on performance of businesses in real estate sector in Nairobi county. *Kcau.ac.ke*. <http://41.89.49.50/handle/123456789/416>
50. Murad, S. A., Muzahid, A. J. M., Azmi, Z. R. M., Hoque, M. I., & Kowsher, M. (2022). A review on job scheduling technique in cloud computing and priority rule based intelligent framework. *Journal of King Saud University - Computer and Information Sciences*, 34(6), 2309–2331. <https://doi.org/10.1016/j.jksuci.2022.03.027>
51. Musamali, J. W., & Muchelule, Y. (2022). CLOUD COMPUTING PRACTICES AND PERFORMANCE OF REAL ESTATE PROJECTS IN NAIROBI COUNTY, KENYA. *International Journal of Social Sciences Management and Entrepreneurship (IJSSME)*, 6(1). <https://sagepublishers.com/index.php/ijssme/article/view/123>
52. Ogidiaka, E., Ogwueleka, F. N., Irhebhude, M. E., & Orji, U. (2022). Local Cloud Computing Service Adoption in Nigeria: Challenges and Solutions. *International Journal of Information Technology and Computer Science*, 14(4), 1–13. <https://doi.org/10.5815/ijitcs.2022.04.01>
53. Ooi, K.-B., Lee, V.-H., Tan, G. W.-H., Hew, T.-S., & Hew, J.-J. (2018). Cloud computing in manufacturing: The next industrial revolution in Malaysia? *Expert Systems with Applications*, 93, 376–394. <https://doi.org/10.1016/j.eswa.2017.10.009>
54. Oredo, J., & Dennehy, D. (2022). Exploring the Role of Organizational Mindfulness on Cloud Computing and Firm Performance: The Case of Kenyan Organizations. *Information Systems Frontiers*. <https://doi.org/10.1007/s10796-022-10351-9>
55. Phaphoom, N., Wang, X., Samuel, S., Helmer, S., & Abrahamsson, P. (2015). A survey study on major technical barriers affecting the decision to adopt cloud services. *Journal of Systems and Software*, 103, 167–181. <https://doi.org/10.1016/j.jss.2015.02.002>
56. Qi, L., Zhang, X., Dou, W., & Ni, Q. (2017). A Distributed Locality-Sensitive Hashing-Based Approach for Cloud Service Recommendation From Multi-Source Data. *IEEE Journal on Selected Areas in Communications*, 35(11), 2616–2624. <https://doi.org/10.1109/JSAC.2017.2760458>

57. Qian, H., Li, J., Zhang, Y., & Han, J. (2014). Privacy-preserving personal health record using multi-authority attribute-based encryption with revocation. *International Journal of Information Security*, 14(6), 487–497. <https://doi.org/10.1007/s10207-014-0270-9>
58. Ravele, K. J., & Mtotywa, M. (2022). Factors influencing quality and performance of cloud computing platforms defined by personal users in South Africa. *International Journal of Research in Business and Social Science* (2147- 4478), 11(7), 78–91. <https://doi.org/10.20525/ijrbs.v11i7.2027>
59. Rittinghouse, J. W., & Ransome, J. F. (2016). Cloud Computing: Implementation, Management, and Security. In *Google Books*. CRC Press. <https://books.google.com/books?hl=en&lr=&id=YRIeASgVUJoC&oi=fnd&pg=PP1&dq=history+of+cloud+services&ots=z8DIq5ngZN&sig=6g238WMPIY-Z-ljEccFfZNnsuPo>
60. S. Alshahrani. (2020). *The Effect of Cloud Computing Adoption on Organizational Performance of SMEs in Saudi Arabia*. <https://www.semanticscholar.org/paper/The-Effect-of-Cloud-Computing-Adoption-on-of-SMEs-Alshahrani/471352c82e5fc2836fda2993f963aa3d69dc8a31>
61. Sabi, H. M., Uzoka, F.-M. E., Langmia, K., & Njeh, F. N. (2016). Conceptualizing a model for adoption of cloud computing in education. *International Journal of Information Management*, 36(2), 183–191. <https://doi.org/10.1016/j.ijinfomgt.2015.11.010>
62. Sabri, O. (2016). Applying the Updated Delone and Mclean is Success Model for Enterprise Cloud Computing Readiness. *International Journal of Cloud Applications and Computing*, 6(2), 49–54. <https://doi.org/10.4018/ijcac.2016040105>
63. Shahzad, F., Xiu, G., Khan, I., Shahbaz, M., Riaz, M. U., & Abbas, A. (2019). The moderating role of intrinsic motivation in cloud computing adoption in online education in a developing country: a structural equation model. *Asia Pacific Education Review*. <https://doi.org/10.1007/s12564-019-09611-2>
64. Sharma, S. K., Al-Badi, A. H., Govindaluri, S. M., & Al-Kharusi, M. H. (2016). Predicting motivators of cloud computing adoption: A developing country perspective. *Computers in Human Behavior*, 62, 61–69. <https://doi.org/10.1016/j.chb.2016.03.073>
65. Shenoy, M. A. (2019). *Issues and benefits of cloud adoption and its current influence on commercial real estate sector of India*. Esource.dbs.ie. <https://esource.dbs.ie/handle/10788/3822>

66. Shi, W. (2021). Analyzing enterprise asset structure and profitability using cloud computing and strategic management accounting. *PLOS ONE*, 16(9), e0257826. <https://doi.org/10.1371/journal.pone.0257826>
67. Shoshtari, S. M. (2013). *CLOUD COMPUTING ADOPTION IN DEVELOPING COUNTRIES - A TENTATIVE FRAMEWORK BASED ON EXPERIENCES FROM IRAN*. <https://www.diva-portal.org/smash/get/diva2:1309140/FULLTEXT01.pdf>
68. Spies, R., Grobbelaar, S., & Botha, A. (2020). A Scoping Review of the Application of the Task-Technology Fit Theory. *Lecture Notes in Computer Science*, 397–408. https://doi.org/10.1007/978-3-030-44999-5_33
69. Starr, C. W., Saginor, J., & Worzala, E. (2020). The rise of PropTech: emerging industrial technologies and their impact on real estate. *Journal of Property Investment & Finance*, 39(2), 157–169. <https://doi.org/10.1108/jpip-08-2020-0090>
70. Ullah, F., Sepasgozar, S. M. E., Jamaluddin Thaheem, M., Cynthia Wang, C., & Imran, M. (2021). It's all about perceptions: A DEMATEL approach to exploring user perceptions of real estate online platforms. *Ain Shams Engineering Journal*. <https://doi.org/10.1016/j.asej.2021.04.023>
71. Ullah, F., Sepasgozar, S., & Wang, C. (2018). A Systematic Review of Smart Real Estate Technology: Drivers of, and Barriers to, the Use of Digital Disruptive Technologies and Online Platforms. *Sustainability*, 10(9), 3142. <https://doi.org/10.3390/su10093142>
72. Vasiljeva, T., Shaikhulina, S., & Kreslins, K. (2017). Cloud Computing: Business Perspectives, Benefits and Challenges for Small and Medium Enterprises (Case of Latvia). *Procedia Engineering*, 178, 443–451. <https://doi.org/10.1016/j.proeng.2017.01.087>
73. Wang, Z., Wang, N., Su, X., & Ge, S. (2020). An empirical study on business analytics affordances enhancing the management of cloud computing data security. *International Journal of Information Management*, 50, 387–394. <https://doi.org/10.1016/j.ijinfomgt.2019.09.002>
74. Warburton, D. (2016). The role of technology in the real estate industry. *Open.uct.ac.za*. <https://open.uct.ac.za/handle/11427/22804>
75. Wyld, D. (2018). THE CLOUDY FUTURE OF GOVERNMENT IT: CLOUD COMPUTING AND THE PUBLIC SECTOR AROUND THE WORLD. *International Journal of Web & Semantic Technology (IJWesT)*, 1(1). <https://www.unapcict.org/sites/default/files/2019-01/0101w1.pdf>

76. Yang, C., Huang, Q., Li, Z., Liu, K., & Hu, F. (2016). Big Data and cloud computing: innovation opportunities and challenges. *International Journal of Digital Earth*, 10(1), 13–53. <https://doi.org/10.1080/17538947.2016.1239771>
77. Zbořil, M. (2023). *Cloud Adoption Framework*. Sciencedirect.com. <https://www.sciencedirect.com/science/article/pii/S187705092200984X/pdf?md5=796560e2a8ba780ab5cdb30081aa705a&pid=1-s2.0-S187705092200984X-main.pdf>
78. Zhang, G., Chen, Y., & Li, G. (2020). The Evolution and Emerging Trends of Cloud Computing Adoption Research. *Proceedings of the 2020 3rd International Conference on Signal Processing and Machine Learning*. <https://doi.org/10.1145/3432291.3433641>
79. Zhen, Z., Yousaf, Z., Radulescu, M., & Yasir, M. (2021). Nexus of Digital Organizational Culture, Capabilities, Organizational Readiness, and Innovation: Investigation of SMEs Operating in the Digital Economy. *Sustainability*, 13(2), 720. <https://doi.org/10.3390/su13020720>

APPENDIX- I (Questionnaire)

The Impact of Cloud Services on the Quality of Work Performance in the Real Estate Sector of Riyadh, Saudi Arabia

Consent Statement

Dear Respondents, I would like to thank you for your cooperation and for allocating some of your precious time to fill out this questionnaire that was prepared for the purpose of research. I would highly appreciate it if you could take part in this survey. This questionnaire is short as it will take approximately only five minutes. We will not ask for your personal information, and your answers will be treated with complete confidentiality and will be entirely anonymous. The reliability of the research depends largely on the information provided by you as a participant. Thank you for giving the time to complete this questionnaire.

(Demographic Questions)

1. Age of the Participant?

1. 18-28 Years
2. 29-39 Years
3. 40-50 Years
4. More than 50 Years

2. Gender of the Participant?

1. Male
2. Female

3. What is your level of Education?

1. High School or below

2. Bachelor's degree
3. Master's degree
4. Doctoral Degree

4. How long have you been working in the real estate sector?

1. Less than 1 year
2. 1-5 years
3. 5-10 years
4. More than 10 years

Cloud Services

1. The use of cloud services has made it easier to access and share documents among team members.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

2. Cloud services have improved our ability to work remotely and collaborate with colleagues.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

3. The security features of cloud services have increased our confidence in storing sensitive data.
 1. Strongly Disagree
 2. Disagree
 3. Neutral
 4. Agree
 5. Strongly Agree
4. Cloud services have reduced the amount of time spent on administrative tasks such as data entry.
 1. Strongly Disagree
 2. Disagree
 3. Neutral
 4. Agree
 5. Strongly Agree
5. Cloud services have allowed us to easily scale our IT infrastructure to meet changing needs.
 1. Strongly Disagree
 2. Disagree
 3. Neutral
 4. Agree
 5. Strongly Agree
6. The cost savings associated with cloud services have positively impacted our real-estate business.
 1. Strongly Disagree
 2. Disagree
 3. Neutral

- 4. Agree
 - 5. Strongly Agree
7. The ease of use of cloud services has increased productivity among team members.
- 1. Strongly Disagree
 - 2. Disagree
 - 3. Neutral
 - 4. Agree
 - 5. Strongly Agree
8. Cloud services have improved our ability to communicate with clients and stakeholders.
- 1. Strongly Disagree
 - 2. Disagree
 - 3. Neutral
 - 4. Agree
 - 5. Strongly Agree

Quality of work performance

1. The use of cloud services has improved the overall quality of work performance in my organization in the real-estate sector.

- 1. Strongly Disagree
- 2. Disagree
- 3. Neutral
- 4. Agree

5. Strongly Agree

2. The use of cloud services has increased the speed and efficiency of completing tasks in my organization.

1. Strongly Disagree

2. Disagree

3. Neutral

4. Agree

5. Strongly Agree

3. The use of cloud services has increased collaboration and teamwork among team members of my organization in the real-estate sector.

1. Strongly Disagree

2. Disagree

3. Neutral

4. Agree

5. Strongly Agree

4. The use of cloud services has increased the accuracy and quality of work output of my organization in the real-estate sector.

1. Strongly Disagree

2. Disagree

3. Neutral

4. Agree

5. Strongly Agree

5. The use of cloud services has improved the level of customer satisfaction in my organization in the real-estate sector.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

6. The use of cloud services has positively impacted the overall competitiveness of my organization in the real estate sector.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

7. The use of cloud services has improved the work-life balance of team members in my organization in the real-estate sector.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

Thanks, Note

The fact that you are reading this message indicates that you have completed our questionnaire and that we owe you a debt of thanks. We are very appreciative of the time you have taken to assist in our analysis and commit to utilizing the information gained to contemplate and implement valuable improvements. We will share these results with you through your State Survey Agency, whom we also thank for their generous participation. Once again, we are extremely grateful for your helpful contribution, your honest information, and your thoughtful suggestions.