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DISSERTAÇÃO

CLOUD COMPUTING ADOPTION DURING SARS-COV-2 PAMDEMIC

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ORIENTAÇÃO:

PROFESSORA DOUTORA WINNIE NG PICOTO

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Learning never exhausts the mind.
Leonardo di ser Piero da Vinci.

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Lisbon, June 28, 2021

Abstract

Due to the rapid global spread of the pandemic caused by the new coronavirus, companies and institutions were forced to take precautionary measures to reduce the risk of contagion, such as asking employees to work remotely from their homes. In this scenario, cloud computing technology has proven to be a great ally of companies to overcome the crisis caused by the pandemic.

The adoption of Cloud Computing technology has accelerated in recent years and, according to a forecast made by the International Data Corporation (IDC), investment in cloud services will exceed US $ 1.0 trillion in 2024, which represents a rate of annual growth of 15.7% (Villars et al., 2020).

In an attempt to help organizations plan their strategies for adopting cloud computing, the present study intends to contribute to the existing literature on the subject, aiming to identify the main factors that influence the adoption of such technology during the Covid-19 pandemic crises.

For this purpose, 18 factors identified during the literature review and were presented to 11 experts in the field of cloud computing technology, in order to seek a consensus regarding the order of importance of these factors.

Through the Delphi method, divided into two phases and with two rounds, a list was obtained, ordered according to the degree of importance of the main factors that influence the adoption of cloud computing. After analyzing the data, the results obtained show that the six most important factors are: (1) Adoption, Migration and Acquisition Cost; (2) Availability and Accessibility; (3) Scalability; (4) Cost of Data Confidentiality and Availability Loss; (5) Security and (6) Customization.

Keywords: Cloud Computing, Covid-19, Cloud Computing Adoption, Delphi Methodology.

Resumo

Devido à rápida disseminação global da pandemia causada pelo novo coronavírus, empresas e instituições foram forçadas a tomar medidas de precaução para reduzir o risco de contágio, como pedir aos funcionários que trabalhassem remotamente das suas casas. Nesse cenário, a tecnologia de computação em nuvem tem se mostrado uma grande aliada das empresas para superar a crise provocada pela pandemia.

A adoção de Computação em Nuvem tem se acelerado nos últimos anos e, segundo previsão da International Data Corporation (IDC), os investimentos em serviços em nuvem ultrapassarão US $ 1,0 milhão de bilhões em 2024, o que representa uma taxa de crescimento anual de 15,7% (Villars et al., 2020).

Na tentativa de auxiliar as organizações no planeamento das suas estratégias de adoção da computação em nuvem, o presente estudo pretende contribuir com a literatura existente sobre o assunto, e tem como objetivo de identificar os principais fatores que influenciam a adoção dessa tecnologia durante a crise pandêmicas de Covid-19.

Nesse sentido, 18 fatores identificados durante a revisão da literatura foram apresentados a 11 especialistas na área de tecnologia de computação em nuvem, a fim de encontrar um consenso quanto à ordem de importância desses fatores.

Através do método Delphi, dividido em duas fases e com duas rondas, foi obtida uma lista ordenada de acordo com o grau de importância dos principais fatores que influenciam a adoção da computação em nuvem. Após a análise dos dados, os resultados obtidos mostram que os seis fatores mais importantes são: (1) Custo de Adoção, Migração e Aquisição; (2) Disponibilidade e acessibilidade; (3) Escalabilidade; (4) Custo de perda de confidencialidade e disponibilidade de dados; (5) Segurança e (6) Personalização.

Palavras-chave: Computação em Nuvem, Covid-19, Adoção de Computação em Nuvem, Metodologia Delphi.

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Abbreviations

AWS - Amazon Web Services

DOI - Diffusion of Innovations

IAAS - Infrastructure as a Service

IDC - International Data Corporation

ISEG - Lisbon School of Economics & Management

IT - Information Technology

NIST - National Institute of Standards and Technology

NMIMS - Narsee Monjee Institute of Management Studies

PAAS - Platform as a Service

SAAS - Software as a Service

TAM - Technology Acceptance Model

TOE - Technology - Organization - Environment

UNESCO - United Nations Educational, Scientific and Cultural Organization

UTAUT - Unified Theory of Acceptance and Use of Technology

WHO - World Health Organization

1. Introduction

In December 2019 a series of pneumonia cases of unknown cause were reported in Wuhan, China's Hubei province, with clinical presentations very similar to viral pneumonia. Analysis of patients' respiratory tract samples indicated infection with a new type of coronavirus, called 2019-nCoV (Huang et al., 2020). After rapidly spreading around the world, the World Health Organization (WHO) declared the new coronavirus a pandemic, which affected at least 220 countries and territories, with the United States of America, India, Brazil, Russia and the United Kingdom being the countries with the highest number of cases. of infection (Worldmeters, 2021). On January 10, 2021, a total number of 88,383,771 confirmed positive cases led to the death of more than 1,919,126 people (WHO, 2021).

Over the months, while the virus spread around the world, China adopted harsh measures of confinement and social distancing, thus managing to reduce to zero the number of cases of local transmission. The success of the distance and social confinement measures adopted by China and strongly recommended by WHO, has encouraged governments in many other countries to take the same measures (Melo et al., 2021).

In a short time, some 80 countries and territories around the world enacted measures to restrict activities and promote social distance. As a result, more than 3.4 billion people remained confined, which resulted in a huge social and economic impact on a global level (Bouziri et al., 2020).

In a report, the United Nations Educational, Scientific and Cultural Organization (UNESCO) informs that, in April 2020, educational institutions were closed in 185 countries, affecting 1,542,412,000 students, representing 89.4% of the total number of students enrolled, and that only during May, some countries, with decreasing numbers of cases and deaths, managed to suspend the confinement measures and gradually resume school activities (Marinoni et al., 2020). The interruption of face-to-face education was felt by many families, as teaching at home is not only a major issue to the productivity of parents, but also to the

social life of their children and the learning of these students. Many evaluations have been canceled others have moved online, on an unproven and unprecedented scale. It is important to note that these school breaks will not only be a short-term problem, but they can also have long-term consequences and are likely to increase inequality (Burgess & Sievertesen, 2020).

During the most critical months of the confinement, the Lisbon School of Economics & Management (ISEG), which is part of the University of Lisbon, took proactive measures to protect students, teachers and employees from being infected with the virus, offering its employees the home office work and students access to classes through a tool in Cloud Computing called Microsoft Teams.

In fact, in recent years the Internet has accelerated the use of cloud services to support the online education system. Cloud Computing has become the main means to enable these services, providing facilities to users with the potential to offer new opportunities for improvement and innovation (Sultan, 2010).

In the scenario of the new coronavirus pandemic, not only educational institutions, but several other organizations sought to adopt alternative measures to face-to-face activity, which generated a greater demand for cloud service providers, since almost all sectors were “forced" to electronically convert their services for the continuation of their activities.

Cloud Computing technology has important attractive features in a scenario like the one above. Its architecture is market-oriented, since, unlike a resource management architecture centered on the traditional system (on-premises), the cloud-based architecture is regulated by the supply and demand of market-balanced cloud resources (Buyya, Yeo & Venugopal, 2008). Another advantage of this technology is its flexibility, that is, a service can easily be expanded or reduced in terms of resources for optimal use (Vaquero, L.M. et al., 2009). In addition, the ability to self-serve in relation to the provision of computational resources and the possibility of paying only for the resources used are characteristics that are highly appreciated by information technology managers. (Leavitt, 2009).

It is also worth mentioning that cloud computing changes the way organizations manage their Information Technology (IT) scenario, challenges traditional governance approaches and often requires organizations to make adjustments to their processes (Armbrust et al., 2010).

In general, cloud computing presents opportunities and challenges for organizations and IT professionals. Some of these challenges are technical, which can be solved over time, while others are related to the uncertainties derived from being involved with a recent innovation (Lin & Chen, 2012).

During the last decade, information technology researchers have applied several economic, strategic, organizational and social theories to identify determining factors in the adoption of Cloud Computing by organizations, producing vast knowledge on the subject. (Schneider & Sunyaev, 2016).

Considering the world pandemic scenario of the new coronavirus and the possibilities offered by Cloud Computing technology, as well as the various studies related to its adoption, it is proposed to answer the following research question: **What are the most relevant factors for the decision of Cloud Computing adoption in organizations in the current pandemic of the new coronavirus?**

Therefore, this work has as main objective to contribute to a better understanding and discussion about the adoption of Cloud Computing by organizations, in view of the determining factors for this in the pandemic scenario of the new coronavirus. For this it is first necessary to present the concepts of Cloud Computing as well as what the Cloud Computing Services and Cloud Computing Deployment Models are, then the concept of Technology Acceptance which makes it possible to understand a Cloud Computing Adoption and the Factors that influence it. Then, the Delphi method is presented, which was applied in an attempt to answer the question proposed in this work. Finally, a conclusion about the observed results is presented.

2. Literature Review

The purpose of the literature review is to understand the relevant work previously done in the Cloud Computing area, as well as the main factors that lead to its adoption.

Although cloud computing is a convenient model for organizations to meet their computing requirements, many challenges are emerging for service providers and technology adopters, given the increased offer of low-cost cloud computing solutions and the need to maintain business activities during the pandemic.

Studies show that there are several levels of adoption of cloud computing, due to differences in social, economic, logistical or operational factors. Some of the factors include cost savings, increased service reliability, collaboration and sharing, disaster prevention, data security and regulatory compliance (Low, Chen & Wu, 2011).

According to Gupta (2013), the factors that affect the adoption of cloud computing permeate technological, organizational and environmental contexts. These three configurations involve stakeholders that include, but are not limited to, cloud service providers, end users, corporate leaders, regulatory authorities and competitors in the marketplace. Prior to the discussion about the main factors of adoption of Cloud Computing, it is necessary to present some brief comments on this technology.

2.1. Cloud Computing

Cloud computing represents a profound shift in the way IT services are developed, deployed, monitored, managed and paid for (Marston et al., 2011). Cloud computing services running on the Internet are rapidly replacing traditional in-house computing systems (Gupta et al., 2013).

Different types of cloud computing definitions are available in the literature. Normally, the definition given by the National Institute of Standards and Technology (NIST) is adopted,

which defines cloud computing as a model that allows ubiquitous, convenient and on-demand access to a shared pool of configurable computing resources that can be provisioned or released quickly with minimal management or interaction effort. In addition, cloud computing has five essential characteristics: On-demand self-service, Broad network access, Resource pooling (location independence), Rapid elasticity and Measured service (Mell & Grance, 2011).

Cloud computing represents the way in which IT services are provided over the Internet through a virtual and scalable infrastructure, enabling the user to access shared resources in a service format adapted to their needs, without having to buy, install, maintain and manage these computing resources (Garrison, Wakefield & Kim, 2015).

Through providers such as Google, Amazon, Microsoft, Alibaba, among others, cloud computing is being widely adopted in different domains. Cloud services like Gmail, Office365, Zoom or Dropbox have become tools used by millions of people every day. Many companies today use native cloud software, such as Salesforce, ServiceNow, Concur, etc. Others prefer to use virtual infrastructure services offered, for example, by Amazon Web Services (AWS) or Microsoft Azure to develop their applications and / or products (Marston et al., 2011).

A study carried out by the International Data Corporation (IDC), found that even in the midst of a pandemic, the expectation of growth in investment in annual digital transformation is 15.5% from 2020 to 2023, in an approximate value of USD $ 6.8 trillion (Fitzgerald et al., 2020). In a publication, the Gartner Institute (2020) reports that IT investments are expected to accelerate further after the pandemic, with cloud computing accounting for 14.2% of total corporate IT spending in 2024, up from 9.1% in 2020, and that spending by end users worldwide on public cloud services is expected to grow by 18.4% in 2021, totaling $304.9 billion, against $257.5 billion in 2020. For one better understanding of the adoption of this technology, it is necessary to discuss its different services and models.

2.1.1. Cloud Computing Services

Cloud Computing service models refer to the types of services that can be obtained in the cloud. The delivery of cloud services is divided into three models: IaaS, PaaS and SaaS, in addition to enabling various derivative combinations, as shown in figure 1.

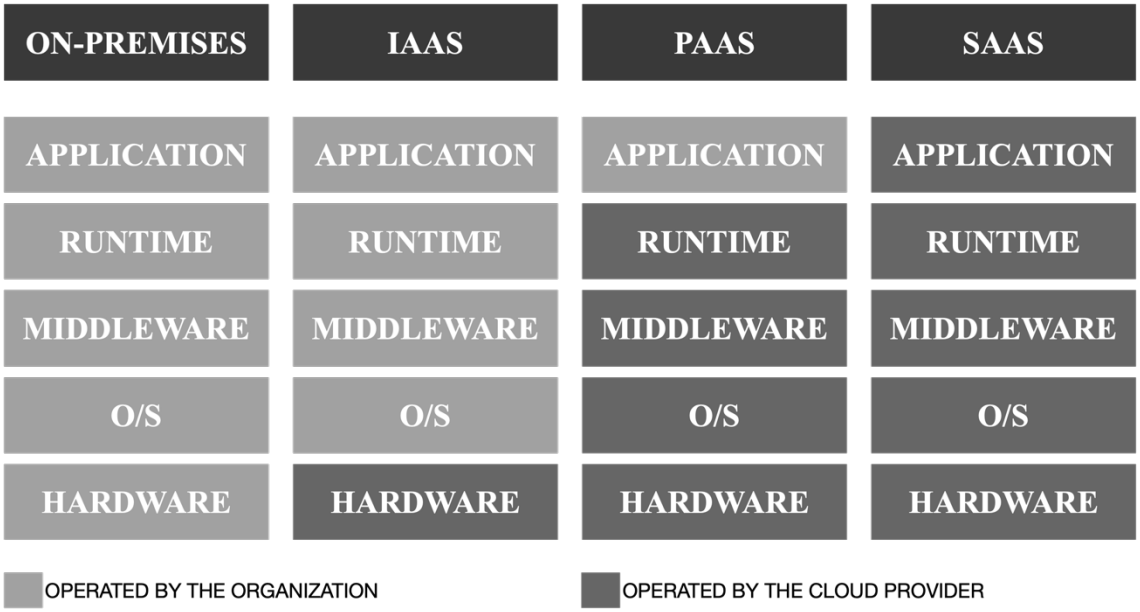

Figure 1 - Service Models for Cloud Computing

Source: Adapted from Pardeshi, V. (2014).

2.1.1.1. Infrastructure as a Service (IaaS)

Infrastructure as a Service - IaaS providers offer storage, networking, virtualization processing, among other computing resources through which the consumer is able to deploy and run applications (Mell & Grance, 2011).

According to Hou (2021), IaaS offers cloud users alternatives to the local infrastructure, avoiding investments in hardware, which can be underused, which would allow a possible reduction in costs with continuous maintenance, as users only pay for the use or provisioning of the services needed to their applications. Also, according to the author, some advantages

and characteristics of IaaS are: Cost Reduction, as it would no longer be necessary to maintain the local infrastructure, which would require a greater investment in maintenance and qualified labor; Flexibility and Scalability, because allows you to update and increase the infrastructure whenever it is necessary; Greater Security, as service providers ensure well-defined security protocols and updates; Better Control, it allows you to know exactly how much is being consumed from the infrastructure.

Some examples of IaaS are: Rackspace, Google Compute Engine (GCE), Amazon Web Services EC2, etc.

2.1.1.2. Platform as a Service (PaaS)

Platform as a Service - PaaS providers offer to consumers the ability to deploy acquired or developed applications to the cloud infrastructure, using programming languages, libraries, services and tools supported by the provider. The consumer does not manage or control the infrastructure but has control over the deployed applications and configuration settings for the application's hosting environment (Mell & Grance, 2011).

According to Hou (2021), PaaS solution provides the platform for developers to create exclusive and customizable software. Also, according to the author, some advantages and characteristics of PaaS are: It is the most economical and time-efficient way for a developer to create an application; Easy to operate without extensive knowledge of system administration; Built on virtualization technology; Scalability, ability to increase the necessary infrastructure.

Some examples of PaaS are: AWS Elastic Beanstalk, Google Application Engine, Microsoft Azure, etc.

2.1.1.3. Software as a Service (SaaS)

In Software as a Service - SaaS, the customer uses a web browser to access an application developed, provided and maintained by third parties, usually for a monthly

subscription fee. The consumer does not manage or control infrastructure services such as network, servers, operating systems, storage or even resources of the applications, with the possible exception of a few configurations of the application itself, such as specific user configurations (Mell & Grance, 2011).

According to Hou (2021), with SaaS, it is no longer necessary to install and run software applications on your computer, everything is available on the Internet when you access your online account. Also, according to the author, some advantages and characteristics of SaaS are: Available over the Internet; Managed by the third-party provider; Ready to use; Safety, convenience, and maintenance as part of the cost.

Some examples of SaaS are: Gmail, DropBox, Microsoft 365, SalesForce, etc.

2.1.2. Cloud Computing Deployment Models

According to the existing literature, there are four cloud deployment models: Community Cloud, Hybrid Cloud, Private Cloud and Public Cloud.

2.1.2.1. Public Cloud

Public Cloud is the most common type of cloud computing deployment. Cloud resources, such as servers and storage, are owned and operated by a third-party service provider and delivered over the Internet. With a public cloud, all hardware, software and other supporting infrastructure are owned and managed by the cloud provider (Mell, & Grance, 2011).

In a public cloud, the infrastructure is shared with other organizations and / or users, who through their web browser access and manage their account and services. Public cloud deployments are often used to provide web-based email, online office applications, storage and test and development environments (Microsoft Azure, 2021).

According to Microsoft Azure (2021) the main advantages of the Public Cloud are: Costs Reduction, there is no need to buy hardware or software, you only pay for the service used; Reliability, a large network of servers protects against failures. Scalability, on-demand features are available to meet business needs whenever you need them; No Maintenance, the cloud service provider provides maintenance.

Some examples of Public Cloud are: Alibaba Cloud, Amazon Cloud (AWS), IBM Cloud, Oracle Cloud, Microsoft Azure, etc.

2.1.2.2. Private Cloud

In Private Cloud, the cloud infrastructure is provided for exclusive use by a single organization, and can be owned, managed or operated by the organization itself, by third parties or by a combination of them (Mell & Grance, 2011).

The private cloud can be physically located in the organization's own datacenter, or it can be hosted by a third-party service provider. Services and infrastructure are always maintained on a private network, with hardware and software dedicated exclusively to the organization itself (Microsoft Azure, 2021).

According to Microsoft Azure (2021) the main advantages of the Private Cloud are: Flexibility, ability to customize the cloud environment to meet specific business needs; Better Control, resources are not shared with others, so higher levels of control and privacy are possible; Scalability, private clouds often offer more scalability compared to local infrastructure.

Some examples of Private Cloud are: Azure Stack, Open Shift, Open Stack, etc.

2.1.2.3. Hybrid Cloud

In Hybrid Cloud, the cloud infrastructure is composed of two or more distinct cloud infrastructures (private, community or public), which belong to the entity itself and are

interconnected by standardized or proprietary technology, which allows the portability of data and applications (Mell & Grance, 2011).

When the need for computer services - such as, for example, processing capacity - fluctuates, hybrid cloud computing allows you to resize the local infrastructure to the public cloud, preventing a breakdown of the applications that are running. Organizations gain the flexibility and innovation that the public cloud offers, while maintaining confidential data in their own datacenter to meet customer needs or regulatory requirements (Microsoft Azure, 2021).

According to Microsoft Azure (2021) the main advantages of the Hybrid Cloud are: Better Control, the organization can maintain a private infrastructure for confidential assets or workloads that require low latency; Flexibility, allows you to take advantage of additional resources in the public cloud when you need them; Cost Reduction, with the ability to scale to the public cloud, you pay for extra computing power only when needed.

2.1.2.4. Community Cloud

In Community Cloud, the cloud infrastructure is provided for exclusive use by a community of consumers who share the same concerns and interests, such as, for example, mission, security requirements, policy and compliance considerations. It can be owned, managed and operated by one or more organizations in the community, a third party, or some combination of them, and it can exist inside or outside the facility (Mell & Grance, 2011).

Community Cloud is similar to a private cloud, but the infrastructure and computing resources are shared exclusively between two or more organizations that have common privacy, security and regulatory considerations (Goyal, 2014).

2.2. Technology Acceptance

After defining the concepts of Cloud Computing Services and their Deployment Models, it is necessary to understand what makes a technology accepted by users or organizations.

The acceptance of a new technology by users or by an organization depends mainly on the perception of how that technology can help them to accomplish tasks in a faster and / or more efficient way. Several frameworks have been proposed to assist in studies on the adoption of innovations in information technology, some of the most used, according to Oliveira & Martins (2011), are:

Diffusion of Innovations (DoI) - The theory explains how innovation is acceptable to users, how it is disseminated, and to what extent it is acceptable at the individual and business level. Furthermore, according to the theory, innovation is transmitted through certain channels over time and within a specific social system. Individuals show different degrees of willingness to adopt innovations, observing a normal statistical distribution of acceptance over time (Rogers, 1995).

Technology Acceptance Model (TAM) - The model was designed to predict acceptance and explain the difference in consumer behavior when it comes to adopting new technologies at work (Davis, 1989).

Technology - Organization - Environment (TOE) - The framework identifies three aspects of a company's context that influence the process by which it adopts and implements a technological innovation: technological context, organizational context, and environmental context (Tornatzky, Fleischer & Chakrabarti, 1990).

Unified Theory of Acceptance and Use of Technology (UTAUT) - This theory is developed based on four pillars that play a significant role in the acceptance of the user and

the usage behavior: expectation of performance, expectation of effort, social influence and facilitating conditions (Venkatesh et al., 2003).

The aforementioned theories have become the basis for measuring the acceptance and use of new technologies. The adoption of cloud computing technology is also largely influenced by factors obtained from these frameworks.

2.2.1. Factors that influence Cloud Computing Adoption

According to Ferreira & Moreira (2012), after conducting a survey with some companies about what the main advantages of using cloud computing would be, most stated that the main advantage is related to the economy, including spending on hardware, software and IT support, followed by the increased computing power that Cloud Computing can provide.

During the last decade, information technology researchers have applied different economic, strategic, organizational, and social theories in order to identify the determining factors in the adoption of Cloud Computing by organizations, producing vast knowledge on the subject (Schneider & Sunyaev, 2016). Such studies have looked at certain factors that can affect user acceptance.

By analyzing more than 35 articles published about Cloud Adoption in the EBSCO, Science Direct, ProQuest database and Google Scholar, Dr. Deepa Ray (2016), from the School of Business Management of NMIMS in Mumbai, India, presents the main models applied to technology acceptance in studies of cloud computing adoption by organizations, some of those studies can be seen in table below.

Author	Article	Theory	Description
(Alshamaila, Papagiannidis & Li, 2013)	*"Cloud computing adoption by SMEs in the north east of England: A multi-perspective framework"*	TOE and DoI	An exploratory study from 15 different SMEs in the North East of England to understand the adoption of cloud computing in the region.
(Borgman, Bahli, Heier & Schewski, 2013)	*"Cloudrise: Exploring Cloud Computing Adoption and Governance with the TOE Framework"*	TOE	An investigation over the factors influencing cloud computing adoption and conceptualize how IT governance structures and processes moderate these factors.
(Gangwar, Date & Ramaswamy, 2015)	*"Understanding determinants of cloud computing adoption using an integrated TAM-TOE model"*	TOE and TAM	Using TOE and TAM to analyze the direct impact on cloud computing adoption over 280 companies in IT, manufacturing and finance sectors in India.
(Hsu, Ray & Hsieh, 2014)	*"Examining cloud computing adoption intention, pricing mechanism, and deployment model"*	TOE and DoI	Uses TOE and DoI frameworks to develop a cloud service adoption model that deals with not only adoption intention, but also pricing mechanisms and deployment models.
(Khajeh-Hosseini, Greenwood, Smith & Sommerville, 2012)	*"The Cloud Adoption Toolkit: supporting cloud adoption decisions in the enterprise"*	Toolkit	Has developed a framework called Cloud Adoption Toolkit to describe the challenges decision makers face in adopting cloud computing in their organizations.
(Lian, Yen & Wang, 2014)	*"An exploratory study to understand the critical factors affecting the decision to adopt cloud computing in Taiwan hospital"*	TOE and HOT-fit	An investigation of the critical factors that will affect the decision to adopt cloud computing technology in developing countries, specifically in Taiwan's hospital industry.
(Nedev, 2014)	*"Exploring the factors influencing the adoption of Cloud computing and the challenges faced by the business"*	TOE	TOE is used to explore the factors that could influence the Cloud adoption in a case of study in a large multinational company, using information gathered from interviews with IT managers.
(Polyviou, Pouloudi & Pramatari, 2014)	*"Cloud Adoption: Relative Advantage or IT fashion"*	TOE and DoI	Has developed a framework called Fashion Management Theory and to understand the Relative Advantage and IT Fashion that could influence the Cloud adoption.

Table 1 - Articles of Cloud Computing adoption

Source: Adapted from Ray, D. (2016).

After analyzing the main factors mentioned in such studies on the adoption of Cloud Computing technology by organizations, researcher Ray concluded that the factors primarily highlighted by most studies under each approach perspective can be organized into four categories, which are related to technical, organizational, environmental, and cost aspects. In addition, their study revealed that within each category, the organization needs to assess its performance against some important criteria related to them, as illustrated in figure 2 (Ray, 2016).

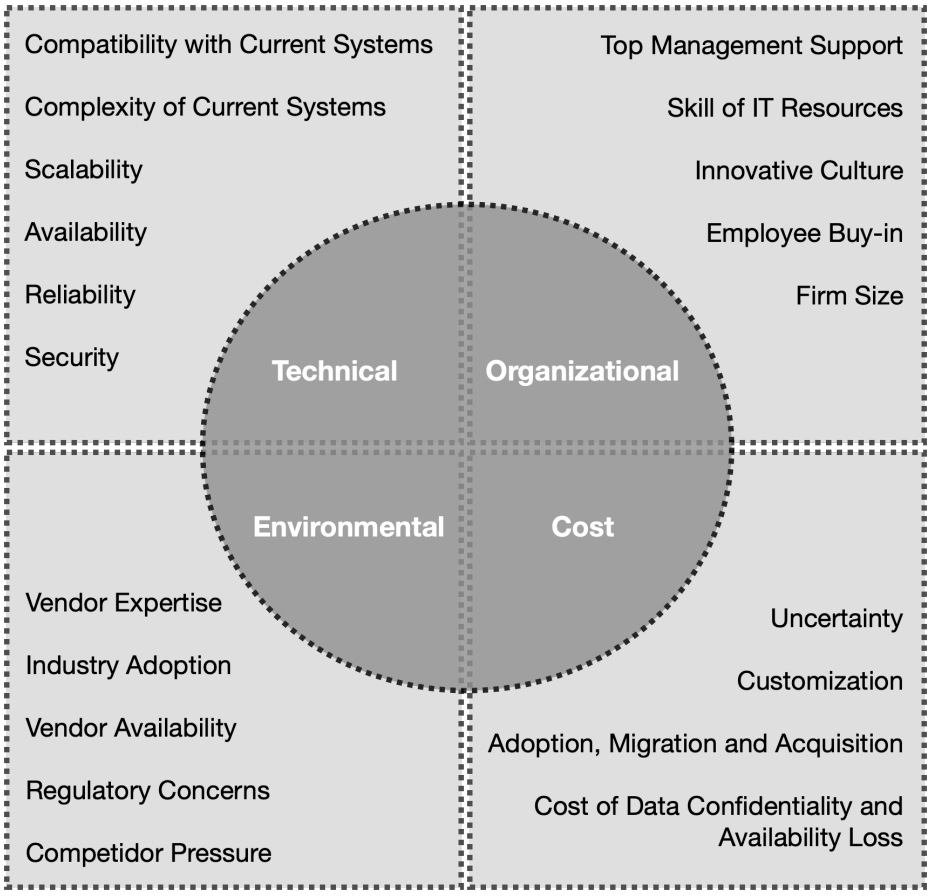

Figure 2 - Four important focus areas for cloud adoption

Source: Adapted from Ray, D. (2016).

3. Methodology

In view of the proposed research question and the objective of this work mentioned above, based on the review of the performed literature, a qualitative exploratory study is proposed using a methodological approach of Delphi rankings (Schmidt, 1997), for better understanding of the determining factors in the adoption of Cloud Computing in the current world pandemic scenario of the new coronavirus.

3.1. Concept of Delphi Method

The Delphi method was first used in the 1950s by RAND Corporation, during a US-sponsored military project. Such a project sought to obtain consensus from a group of experts, from the point of view of a Soviet strategic planner, on what would be the number of atomic bombs needed to reduce the production of ammunition by a certain amount, targeting US industries (Dalkey & Helmer, 1963).

Such a method consists of rounds of questions and a group decision-making process, based on iterative feedback, where expert opinions are evidenced until a consensus is reached (Okoli & Pawloski, 2004). It usually involves two or three rounds of questions, which through the classification of the items answered and the frequency distribution, the level of agreement among the experts is identified (Goodman, 1987).

Although the Delphi method does not have a well-defined execution model, normally the literature proposes its division as follows (Barrios et al., 2021; Marques & Freitas, 2018; Dalkey & Helmer, 1963; Goodman, 1987):

At first, experts are chosen and the first questionnaire to be answered by them is elaborated (Q1). The first contact with the experts is then made, inviting them to participate in the research, as well as sending the first questionnaire.

After receiving the responses to the first questionnaire, these responses are analyzed qualitatively and quantitatively. Then a second questionnaire (Q2) is prepared and sent to the participants, along with feedback. As soon as the responses to the second questionnaire are received, qualitative and quantitative analyzes of these responses are carried out. The model is repeated by inserting questionnaires (QN) with the respective analyzes, aiming to find a consensus in the responses of the participants.

Finally, the final report is written with the conclusion of the research. The process described above can be understood through figure 3.

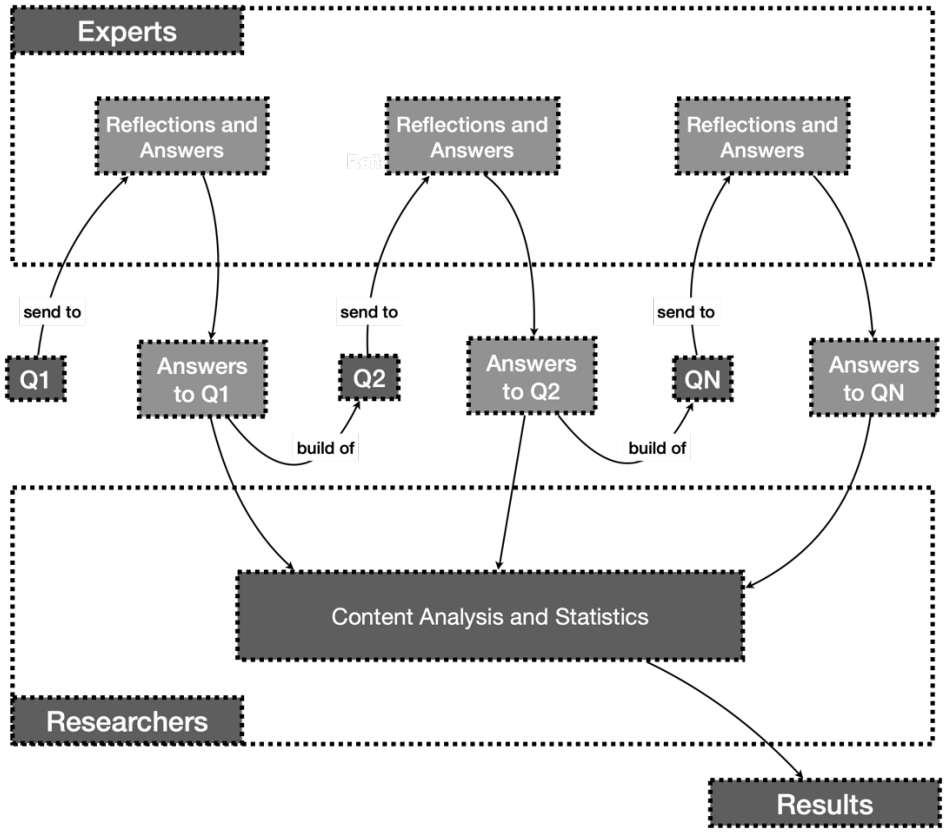

Figure 3 - Generic scheme of Delphi implementation method

Source: Adapted from Marques, J. B. V. & Freitas, D. (2018).

Although there is no rule that determines the size and number of groups of experts (or panels), as this varies according to the nature of the study to be carried out, it usually uses between ten and eighteen people. The experts on the panel must be impartial so that the

information obtained reflects current knowledge or perceptions (Keeney, Hasson & McKenna, 2001; Okoli & Pawloski, 2004).

As in other qualitative approaches, the Delphi method does not need to guarantee the representativeness of the statistical samples because this is a group decision mechanism to reach a group consensus (Okoli & Pawloski, 2004). In addition to the panel size, another aspect to be taken into account is its heterogeneity, which depends on the project objective, selected design and time period for data collection (Keeney, Hasson & McKenna, 2001).

As suggested earlier, the goal of the Delphi method is to achieve a high degree of consensus. This leads to another important decision, how to define the concept of "degree of consensus"? For this, the agreement rates using statistics such as the Kendall coefficient of agreement (W) or the standard Pearson correlation coefficient (r) can be considered to ensure the most rigorous evaluation of the classifications (Keil, Lee & Deng, 2013).

These coefficient makes it possible to determine realistically whether consensus has been reached; whether consensus among experts increased or decreased between rounds; and verify the relative strength of consensus. Since most Delphi studies use a small sample size, the use of non-parametric statistics such as Kendall's W is the preferred method for interpreting the results in each round of a Delphi study (Kalaian & Kasim, 2012).

W	Interpretation	Confidence in Ranks
0,1	Very weak agreement	None
0,3	Weak agreement	Low
0,5	Moderate agreement	Fair
0,7	Strong agreement	High
0,9	Unusually strong agreement	Very High

Table 2 - Kendall’s W values

Source: Adapted from Schmidt (1997, p.767).

Regarding the degree of consensus, for this study, we chose to adopt a Kendall W value greater than 0.5, which represents a high agreement (satisfactory result). However if this value is not reached, and the repetition of iterations results in similar Kendall W values, Schmidt (1997) argues that the process must be closed.

The fact that the panel members obtain a high level of consensus by itself does not determine the convergence between the different rounds, for this reason it is important to use in addition the Spearman's correlation coefficient between the results of the successive rounds. These two coefficients measure not only the experts' agreement within a round, but also the convergence given by the correlation between the rounds (Santos & Amaral, 2004).

Spearman's correlation coefficient, r, can assume a range of values between -1 to +1. A value of 0 indicates that there is no association between the variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the value of the other variable. A value less than 0 indicates a negative association; that is, as the value of one variable increases, the value of the other variable decreases (Satue et al., 2013). Then after each round of questions and analysis of responses, it is necessary to consider whether a new round can generate greater consensus (Kalaian & Kasim, 2012).

3.2. Methodology Application

Following the model suggested in the previously mentioned Generic Scheme of the Delphi Implementation Method (figure 3) by Marques & Freitas (2018), an online survey was carried out in order to seek a consensus on the most relevant factors for the adoption of the Technology cloud in the current pandemic scenario of the new coronavirus. For this purpose, a questionnaire based on the grouping of 4 categories and its 18 factors identified by Ray (2016) was sent to specialists in Cloud Computing, in the area of information technology, where experts should rank such factors in order of importance.

Categories	Factors
Cost	Adoption, Migration and Acquisition Cost
	Customization
	Uncertainty
	Cost of Data Confidentiality and Availability Loss
Technical	Complexity of Current Systems
	Compatibility with Current Systems
	Scalability
	Availability and Accessibility
	Security
Organizational	Top Management Support
	Firm Size
	Skill of IT Resources
	Employee Buy-in
	Innovative Culture
Environmental	Industry Adoption
	Competitor Pressure
	Regulatory Concerns
	Vendor Expertise/ Availability

Table 3 - Cloud adoption Factors and their Categories

3.2.1. Questionnaire

According to Schmidt (1997), the ideal size for the list of items to be classified by the experts in this stage would be a minimum of 10 and a maximum of 20.

For the elaboration of the questionnaire, an online tool called Survio (https://www.survio.com/survey/d/Z5F7I2G7B6Y4K9Q4P) was used, which allows this type of analysis by ranking.

At this stage, the questionnaire was composed of 3 parts. The first part contains 6 questions regarding demographic information about the participants (Experts):

- What gender do you identify as?
- What is the highest degree or level of education you have completed?
- Where are you located? (Country)
- How many years of experience do you have in IT?
- How long have you been working with cloud computing?
- In which specialty below do you identify yourself the most?

The second part with just 1 question about Cloud perception:

- Do you believe that the new pandemic coronavirus has changed the way companies think about cloud computing?

In the third part, the respondents were asked to classify the 18 factors, placing in order of importance, where first place is the most important up to 18th as the least important.

- What are the most relevant factors for the decision to adopt Cloud Computing in organizations at the current time of the new coronavirus pandemic?

More details about the questionary can be found in the annexes: I and II.

In the present study, the panel consists of eleven professionals with more than 10 years of experience in Information Technology and with at least 1 year of experience in Cloud Computing. The selection of professionals specialized in the theme as well as the invitation to participate in the research was carried out through direct contact through the professional

social network LinkedIn. More information about the experts that part of the panel can be seen in the table below.

Answer Choices	Answer	Ratio
What gender do you identify as?		
Male	11	100,0%
What is the highest degree or level of education you have completed?		
Bachelor's Degree	9	81,8%
Master's Degree	2	18,2%
Where are you located? (Country)		
Australia	2	18,2%
Brazil	7	63,6%
Chile	1	9,1%
Portugal	1	9,1%
How many years of experience do you have in IT?		
10 - 12 years	1	9,1%
13 - 15 years	3	27,3%
More than 15 years	7	63,6%
How long have you been working with cloud computing?		
1 - 3 years	5	45,5%
More than 3 years	6	54,5%
In which specialty below do you identify yourself the most?		
Administrator	1	9,1%
Architect	5	45,5%
Engineer	3	27,3%
Network	2	18,2%

Table 4 - Panel composition

3.2.2. First Round

The first round of questions started on March 25, 2021 and lasted until April 10, 2021. All 11 expert members who make up the panel responded to the first round, which corresponds to a 100% response rate. During the course of the questionnaire, the only means of contact with the experts was by email, with no prior communication with the panel members.

After returning the answers, the open-source software GNU PSPP was used to perform data processing and statistical analysis of the sample.

After the analysis of the first round, the Kendall W value obtained was 0.48, which according to Schmidt (1997), indicates a Weak Agreement.

Test Statistics	
N	11
Kendall's W	,48
Chi-Square	90,67
Df	17
Asymp. Sig.	,000

Table 5 - Kendall's W coefficient result of the first Round

Source: Adapted from PSPP

Given the low value of Kendall's W resulting from the first round, it was decided to carry out another round to try to improve the degree of consensus among experts. The following table shows the results of the first round:

Ranking	Factors	Mean
1º	Adoption, Migration and Acquisition Cost	4,27
2º	Availability and Accessibility	4,64
3º	Scalability	5,09
4º	Cost of Data Confidentiality and Availability Loss	5,36
5º	Security	6,18
6º	Customization	7,73
7º	Uncertainty	7,82
8º	Compatibility with Current Systems	8,09
9º	Complexity of Current Systems	8,73
10º	Top Management Support	9,27
11º	Innovative Culture	9,82
12º	Industry Adoption	11,09
13º	Skill of IT Resources	11,91
14º	Competitor Pressure	12,36
15º	Firm Size	13,00
16º	Employee Buy-in	14,64
17º	Vendor Expertise/ Availability	15,00
18º	Regulatory Concerns	16,00
Spearman r		0,43334271
Kendall's W		0,48485701

Table 6 - Round 1 statistical data

Source: Adapted from PSPP.

3.2.3. Second Round

The second round of questions began on April 29, 2021, and lasted until May 12, 2021, and again all 11 panel members who had responded to Round 1 responded to Round 2, which corresponds to a 100% response rate. During the course of the second questionnaire, the only means of contact continued to be exclusively by e-mail.

For the second questionnaire, the factors of adoption of cloud computing were presented, ordered according to the average obtained in the first round, in addition to informing that the objective of taking another shift would be to increase consensus among experts. In order to try to contribute to a greater wealth of the present study, two more questions were also asked to the experts in this round.

- Do you identify any other important factors for adopting cloud computing that are not on this list?
- What do you think has changed in the way companies think about cloud computing?

Neither of the two proposed questions had to be answered obligatorily. More details about the second questionary can be found in the Annex IV.

For the first question, the experts pointed factors like *"Flexibility to adopt new solutions"*; *"Customer/ Clients Pressure"* and *"Time to market, tooling(automation), make agile culture/devops possible"*.

Observing the experts' answers to the second question, it is possible to relate the factors of adoption of cloud computing with the change in the organizations' view about this technology.

Scalability, Availability and Accessibility are the factors that could be seen in: *"During the pandemic some customers finally noticed how it is easier and cheaper is to maintain and expand solutions over cloud infrastructure, as almost everything can be managed and*

expanded remotely by experts" and *"Information sharing for the most accessible team combined with remote access".* According to Ray (2016), such factors demonstrate the concern of organizations in understanding how easily the cloud provider can scale the application for them, or even knowing whether the provider can guarantee the fulfillment of the current need in terms of availability and accessibility of their systems.

Is it possible to identify the factors Competitor Pressure and Industry Adoption in these answers: *"Covid forced many to accelerate adoption. Now that many have more maturity and more companies loved it, this brings more comfort for many others to adopt"* and *"More companies adopting, that puts pressure and make the competition".* Such factors show the concern of organizations in knowing to what extent the use of cloud-based applications has penetrated the sector in which they are inserted, as well as knowing if their main competitors have already adopted the cloud and if they are seeing benefits in this adoption (Ray, 2016).

Security is the factor that can be seen in: *"I believe that the biggest concern before was the maturity and security that the cloud platform could offer and that actually goes beyond"* and *"During the pandemic, they realized that cloud would be the safer and fast way to keep their projects running, accomplish SLA's already set on new contracts or deployments and it would be the safer way for employees".* According to Ray (2016), this factor refers to the concern of organizations regarding the ability to replicate the same security measures they already have in their on-premises environments, in the cloud environment, as well as knowing what types of security mechanisms cloud providers have.

Innovative Culture and Uncertainty are the factors that can be highlighted in these sentences: *"I would say that companies had to adapt very quickly during the pandemic. Not only to keep the business running, but also as a way to take advantage of to accelerate projects that had been shelved for some time. I think that companies are finally seeing more of the potential of cloud computing"* and *"Perhaps it has changed the timing to a move to the cloud. Those that would do this in the near future, anticipated this change to take advantage of the opportunity and the competition".* Here the factors reference organizations' concern to understand how cloud-based work environment can be seen as an innovative way

of doing things, and if cloud-based applications can be changed quickly as well as what would be the cost of such a reconfiguration (Ray, 2016).

The classification of the main factors for the adoption of cloud computing technology during the pandemic of the new coronavirus after the second round is as follows:

Ranking	Factors	Mean
1º	Adoption, Migration and Acquisition Cost	1,64
2º	Availability and Accessibility	3,09
3º	Scalability	3,64
4º	Cost of Data Confidentiality and Availability Loss	4,64
5º	Security	5,82
6º	Customization	7,09
7º	Top Management Support	8,27
8º	Compatibility with Current Systems	8,36
9º	Complexity of Current Systems	9,18
10º	Uncertainty	9,27
11º	Innovative Culture	10,55
12º	Industry Adoption	10,73
13º	Competitor Pressure	12,64
14º	Skill of IT Resources	13,00
15º	Firm Size	14,73
16º	Vendor Expertise/ Availability	15,09
17º	Employee Buy-in	15,82
18º	Regulatory Concerns	17,45
Spearman r		0,739412703
Kendall's W		0,763102457

Table 7 - Round 2 statistical data

Source: Adapted from PSPP.

After the analysis of the second round, the Kendall's W value obtained was 0.76, which according to Schmidt (1997), indicates a Strong Agreement.

Test Statistics	
N	11
Kendall's W	,76
Chi-Square	142,70
Df	17
Asymp. Sig.	,000

Table 8 - Kendall's W coefficient result of the second Round

Source: Adapted from PSPP.

Given the Strong Agreement observed in Kendall's W supplemented with Spearman's correlation coefficient after analysis of the second round data, there is no need for a new round of questions with the experts (Schmidt, 1997).

4. Obtained Results

After analyzing the data, it was possible to verify that the panel formed by professionals with knowledge on the topic under study registered a strong agreement on the opinions regarding the ranking, in addition it is important to highlight that few experts totally agreed with the order resulting from the scores of the first research round.

Another fact to be highlighted was the strong convergence of opinions between the two rounds, which can be seen in Table 9, where there were no changes in the positions of the first six factors proposed. This may be due to the Delphi methodology allowing experts to

check the ranking order resulting from the first round and after performing a self-analysis, changing or not the perceptions of the most important factors.

Categories	Factors	Round 1 Mean	Round 1 Rank	Round 2 Mean	Round 2 Rank
Cost	Adoption, Migration and Acquisition Cost	4,27	1º	1,64	1º
Technical	Availability and Accessibility	4,64	2º	3,09	2º
Technical	Compatibility with Current Systems	8,09	8º	8,36	8º
Environmental	Competitor Pressure	12,36	14º	12,64	13º
Technical	Complexity of Current Systems	8,73	9º	9,18	9º
Cost	Cost of Data Confidentiality and Availability Loss	5,36	4º	4,64	4º
Cost	Customization	7,73	6º	7,09	6º
Organizational	**Employee Buy-in**	14,64	**16º**	15,82	**17º**
Organizational	Firm Size	13,00	15º	14,73	15º
Environmental	Industry Adoption	11,09	12º	10,73	12º
Organizational	Innovative Culture	9,82	11º	10,55	11º
Environmental	Regulatory Concerns	16,00	18º	17,45	18º
Technical	Scalability	5,09	3º	3,64	3º
Technical	Security	6,18	5º	5,82	5º
Organizational	**Skill of IT Resources**	11,91	**13º**	13,00	**14º**
Organizational	**Top Management Support**	9,27	**10º**	8,27	**7º**
Cost	**Uncertainty**	7,82	**7º**	9,27	**10º**
Environmental	**Vendor Expertise/ Availability**	15,00	**17º**	15,09	**16º**
Chi-Square		**90,66826156**		**142,7001595**	
p-value		**4,61355E-12**		**6,51298E-22**	
Kendall's W		**0,484857014**		**0,763102457**	
Spearman r		**0,433342715**		**0,739412703**	
Spearman Correlation (CORREL Function Excel)		**0,984529576**			

Table 9 - Comparison of the classification between Rounds

Source: Adapted from PSPP.

The most prominent factor in both rounds was “Adoption, Migration and Acquisition Cost”. According to Ray (2016), for an organization that wants to migrate to the cloud, they need to understand and compare for example “the current cost of maintenance of the system (on-premises)” and “the cost of set up, subscription and maintenance of the new cloud system”.

The second most important factor in the experts' opinion was Availability and Accessibility, also according to Ray (2016), companies that aim to migrate to the cloud need to seek answers to the questions: “How critical is the application in terms of its need? to be available and accessible?” and “What kind of redundancy measures does the current system have?”, thinking about their on-premises systems, and “Can the cloud based vendor assure meeting the current need in terms of system availability and accessibility?” thinking about their systems in the cloud.

Scalability was in third place among the factors most voted by the experts in both rounds. The analysis that the company needs to make of this factor, according to Ray (2016) is to compare “how easily can the current system grow and scale with respect to the business needs” against “how easily is to grow the application in the cloud".

In addition to the first three factors previously mentioned, we can highlight another important factor that changed its position after the second round.

The seventh place in the final round was Top Management Support, this factor in the first round was in tenth place. According to Ray (2016), for this factor it is important to understand “how well does the current system perform according to the current team of top executives”, “how knowledgeable are the top executives in terms of the benefits and risks of moving to cloud” and if “is there at least 1 top Executive ready to be the project sponsor”.

5. Conclusion

Although migration to the cloud is a global trend in the quest to improve performance or just maintain working conditions, it is evident that it is extremely important for companies to present dynamic and adaptable solutions in various aspects and situations, even more so during this current situation to cope with the pandemic of the new coronavirus, where each challenge to be faced requires its own solution, such as organizing and maintaining the guideline of a company even without meeting in person or going to the office. Strategic concern is necessary to adapt organizational processes and structures to meet the demands of change and to be able to derive value from change. Organizations and decision makers need to face considerable challenges if they are to capture the full potential of this technology.

The present study aimed to identify and rank, according to their degree of importance, the most important factors for the adoption of cloud computing technology in organizations. In addition, an important contribution of this work was to present a “simpler and faster” way of filtering the various factors relevant to the decision of adopting the cloud.

Due to the strong agreement in the last round, this empirical study shows that the ordering of the six most important factors for the adoption of cloud computing technology showed great coherence through Spearman's correlation coefficient because they occupy the same positions in the two rounds. In this case, the six most important factors for the panel of experts that allow us to answer the research question of the present study are: (1) Adoption, Migration and Acquisition Cost; (2) Availability and Accessibility; (3) Scalability; (4) Cost of Data Confidentiality and Availability Loss; (5) Security; (6) Customization.

One of the limitations that can be mentioned in the development of this study is related to the number of specialists willing to collaborate and answer the questionnaires proposed in the research. This is because this factor directly influences the number of panels that can be developed simultaneously on the subject studied, which would make it possible to compare not only the experts' responses, but also between the different panels.

Another limitation concerns the coverage of the countries in the sample. Although the study covers the perspective of experts from 4 different countries, the representativeness can be improved in a future study, expanding the number of countries in the sample.

Future research may address two other areas. First, comparative studies can investigate additional characteristics regarding the sector of economic activity of companies that intend to adopt cloud computing technology and thus verify whether there are different perceptions. Second, with additional data over time, future research could examine the real impact of a migration to the post-pandemic cloud and thus analyze whether there is a gradual shift in the adoption factors of the technology. However, the results of this study provide important contributions to research and practice.

It is evident that it is extremely important for companies to present dynamic and adaptable solutions in different aspects and situations, even more in this current situation of facing the new coronavirus pandemic, where for each challenge to be faced, a quick response solution is required and as accurate as possible. Strategic concern is necessary to adapt organizational processes and structures to meet the demands of change and to be able to derive value from change. Organizations and decision makers need to face considerable challenges if they are to capture the full potential of this technology.

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Appendix

Annex I – Perception about Cloud has changed?

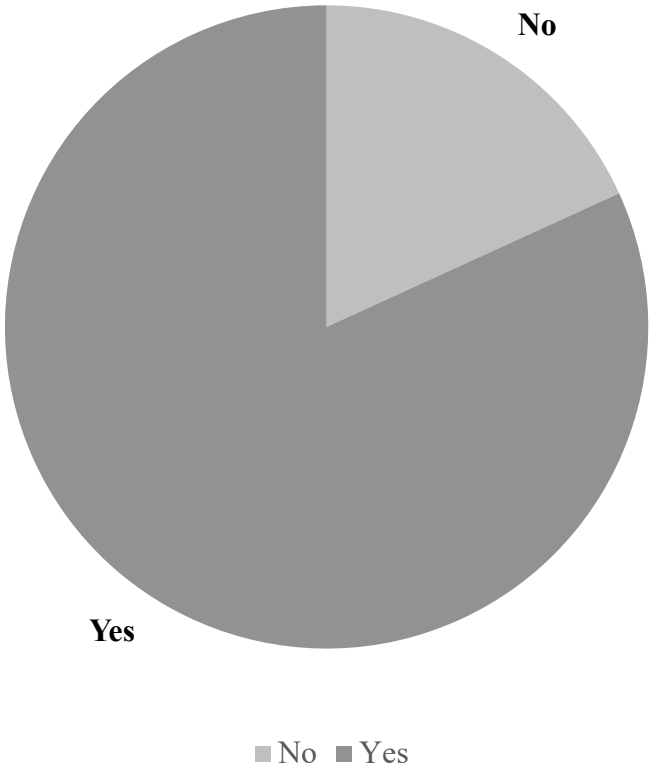

Figure 4 - Perception about Cloud Computing

Answer Choices	Answer	Ratio
No	2	18,2%
Yes	9	81,8%

Table 10 - Perception about Cloud Computing

Annex II – First Questionnaire (Round 1)

1. Demographic questions - Gender*

What gender do you identify as?

- Female
- Male
- Prefer not to answer

2. Demographic questions - Education*

What is the highest degree or level of education you have completed?

- Bachelor's Degree
- High School
- Master's Degree
- Ph.D. or higher

3. Demographic questions - Location*

Where are you located? (Country)

Type one or a few words...

30

4. Demographic questions - Experience*

How many years experience do you have in IT?

- Less than 3 years
- 4 - 6 years
- 7 - 9 years
- 10 - 12 years
- 13 - 15 years
- More than 15 years

5. Demographic questions - Experience in Cloud Computing*

How long have you been working with cloud computing?

- Less than 1 year
- 1 - 3 years
- More than 3 years

6. Demographic questions - Cloud Computing Specialty*

In which specialty below do you identify yourself the most?

- Administrator
- Analytics
- Architect
- Big Data
- Database
- Developer
- Engineer
- Network
- Security
- Other...

7. Perception about Cloud Computing*

Do you believe that the new coronavirus pandemic has changed the way companies think about cloud computing?

- No
- Yes

8. What are the most relevant factors for the decision to adopt Cloud Computing in organizations at the current time of the new coronavirus pandemic?

* Please rank the following cloud adoption factors in order of importance (1 - being the most important in your point of view). ** These factors are based on a study published by Dr. Deepa Ray called, "Cloud Adoption Decisions: Benefitting from an Integrated Perspective", which can be found at this link - https://academic-publishing.org/index.php/ejise/article/view/168

1. 1. Adoption, Migration and Acquisition Cost
2. 2. Customization
3. 3. Uncertainty
4. 4. Cost of Data Confidentiality and Availability Loss
5. 5. Complexity of Current Systems
6. 6. Compatibility with Current Systems

7. Scalability

8. Availability and Accessibility

9. Security

10. Top Management Support

11. Firm Size

12. Skill of IT Resources

13. Employee Buy-in

14. Innovative Culture

15. Industry Adoption

16. Competitor Pressure

17. Regulatory Concerns

18. Vendor Expertise/ Availability

Annex III – Round 1 Descriptive Statistics

Variable	N	Mean	Std Dev	Minimum	Maximum
Adoption, Migration and Acquisition Cost	11	4,27	3,07	1	11
Availability and Accessibility	11	4,64	3,75	1	11
Scalability	11	5,09	4,28	1	13
Cost of Data Confidentiality and Availability Loss	11	5,36	2,38	3	10
Security	11	6,18	4,14	1	14
Customization	11	7,73	5,27	1	18
Uncertainty	11	7,82	5,62	2	18
Compatibility with Current Systems	11	8,09	3,51	3	13
Complexity of Current Systems	11	8,73	3,13	4	14
Top Management Support	11	9,27	3,77	1	14
Innovative Culture	11	9,82	4,81	1	16
Industry Adoption	11	11,09	4,55	4	16
Skill of IT Resources	11	11,91	3,27	7	17
Competitor Pressure	11	12,36	4,65	3	17
Firm Size	11	13,00	2,45	9	17
Employee Buy-in	11	14,64	1,57	13	18
Vendor Expertise/ Availability	11	15,00	5,02	5	18
Regulatory Concerns	11	16,00	2,10	11	18

Table 11 - Round 1 Descriptive Statistics

Source: Adapted from PSPP.

Annex IV – Second Questionnaire (Round 2)

1. What are the most relevant factors for the decision to adopt Cloud Computing in organizations at the current time of the new coronavirus pandemic? * The factors are ordered according to the average preference obtained in the previous survey.

* Please rank again the following cloud adoption factors in order of importance (1 - being the most important in your point of view). *** These factors are based on a study published by Dr. Deepa Ray called, "Cloud Adoption Decisions: Benefitting from an Integrated Perspective", which can be found at this link - https://academic-publishing.org/index.php/ejise/article/view/168

1. Adoption, Migration and Acquisition Cost
2. Availability and Accessibility
3. Scalability
4. Cost of Data Confidentiality and Availability Loss
5. Security
6. Customization
7. Uncertainty
8. Compatibility with Current Systems
9. Complexity of Current Systems
10. Top Management Support

11. Innovative Culture

12. Industry Adoption

13. Skill of IT Resources

14. Competitor Pressure

15. Firm Size

16. Employee Buy-in

17. Vendor Expertise/ Availability

18. Regulatory Concerns

2. Do you identify any other important factors for adopting cloud computing that are not on this list?

If you identify any factors that in your view have been left out, please inform below.

Escreva uma ou algumas palavras...

300

3. What do you think has changed in the way companies think about cloud computing?

In the first phase it was asked: Do you believe that the new pandemic coronavirus has changed the way companies think about cloud computing? 81.8% of the experts answered yes. if you believe that the new pandemic coronavirus has changed the way companies think about cloud computing.

Escreva uma ou algumas palavras...

300

Annex V – Round 2 Descriptive Statistics

Variable	N	Mean	Std Dev	Minimum	Maximum
Adoption, Migration and Acquisition Cost	11	1,64	1,12	1	4
Availability and Accessibility	11	3,09	2,17	2	9
Scalability	11	3,64	1,80	2	8
Cost of Data Confidentiality and Availability Loss	11	4,64	2,46	1	11
Security	11	5,82	3,34	1	13
Customization	11	7,09	3,81	4	15
Top Management Support	11	8,27	2,83	1	11
Compatibility with Current Systems	11	8,36	1,91	5	11
Complexity of Current Systems	11	9,18	1,54	7	12
Uncertainty	11	9,27	4,00	6	18
Innovative Culture	11	10,55	3,21	5	18
Industry Adoption	11	10,73	3,04	2	12
Competitor Pressure	11	12,64	3,14	4	15
Skill of IT Resources	11	13,00	2,05	8	17
Firm Size	11	14,73	1,01	12	16
Vendor Expertise/ Availability	11	15,09	4,30	5	17
Employee Buy-in	11	15,82	0,75	14	17
Regulatory Concerns	11	17,45	1,29	14	18

Table 12 - Round 2 Descriptive Statistics

Source: Adapted from PSPP.

Annex VI – Bivariate Correlation

		Round 1	Round 2
Round 1	Pearson Correlation	1,000	0,985
	Sig. (2-tailed)		0,000
	N	18	18
Round 2	Pearson Correlation	0,985	1,000
	Sig. (2-tailed)	0,000	
	N	18	18

Table 13 - Bivariate Correlation results

Source: Adapted from PSPP.