

IMPACT OF CLOUD STRATEGY IMPLEMENTATION ON DIFFERENT INDUSTRIES.

GOAL - THE EVOLUTION OF CLOUD TECHNOLOGY IN BUSINESS SECTORS.

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FINAL THESIS REPORT

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## **DECLARATION**

I, Aditya Vikram Bhunja, declare that this dissertation entitled “Impact of Cloud Strategy Implementation on Different Industries” is entirely my own work for the degree of Master of Business Administration under the guidance of Dr. Divyesh Arora at the Liverpool John Moores University. Source of direct quotations and all other references have been accredited in the text and listed in full in the reference list.

## **DEDICATION**

This in-depth research is devoted to everyone who is making steps toward technological advancement and innovation, especially in adopting and executing cloud strategies in a wide range of sectors. Your unwavering commitment to improving the state of the industry as a whole, increasing operational efficiency, and paving the way for future developments is much appreciated. This work is dedicated to the innumerable teams all around the world for their extraordinary perseverance, agility, and originality in adopting cloud computing and other cutting-edge technology. You people are the digital transformation's agents and the architects of change. This work is dedicated as a mark of encouragement to the next generation's aspiring leaders, tech enthusiasts, and entrepreneurs. I hope you will use this research not only as a reference but as a springboard for new ideas that will influence the future of technology and business.

## **ACKNOWLEDGEMENT**

To everyone who made it possible for me to finish this report, thank you from the bottom of my heart. I want to express my gratitude to everyone who contributed ideas, insights, and information to make this report as thorough and informative as it is. Their willingness to adapt to changing circumstances and use of cutting-edge technology made for a wealth of data and a good basis for this study. I also want to give credit where credit is due, and that goes to the many scholars and professionals in the field whose detailed reports and analyses formed the backbone of our work's structure and context. We owe a great deal to their foresight in investigating cloud computing's potential and its effects on many industries. In closing, I want to give my sincerest thanks to everyone who has helped me in any way over the time which I have spent researching and producing this report, especially my family and friends. Without them, I could not have completed this task. It's really appreciated.

## **ABSTRACT**

This study explores the transformative impact of cloud strategy implementation across various industries and elucidates the evolution of cloud technology in business sectors. With the advent of the digital age, cloud computing has undeniably become a vital component of modern business strategies, reshaping the very fabric of different industries and driving a significant shift in their operating models. Through the course of this paper, we will trace this pivotal journey, underlining how different sectors have adopted and benefited from cloud-based solutions. The implementation of cloud strategies has revolutionized the business landscape, enabled scalability, flexibility, and efficiency while significantly cut down infrastructure costs. The crux of the paper also dwells on the evolution of cloud technology, which has moved beyond being a mere storage solution to becoming a crucial element of digital transformation. It uncovers the transformation from simple Software-as-a-Service (SaaS) models to complex Platform-as-a-Service (PaaS) and Infrastructure-as-a-Service (IaaS) models, which offer comprehensive solutions for businesses. It also discusses the rise of hybrid and multi-cloud strategies, which provide organizations with the flexibility to utilize different cloud services based on their unique needs.

The research acknowledges the challenges faced by industries in the adoption of cloud strategies, including security concerns, data privacy issues, and the need for upskilling. However, it posits that with robust strategies and effective change management, these challenges can be overcome to leverage the enormous potential of cloud computing. This paper concludes with a reflection on the future of cloud technology, emphasizing its continuing impact on industry growth, innovation, and competitive advantage. It underlines the role of cloud computing in enabling industries to navigate the complexities of the digital world and leverage the myriad opportunities it offers. In essence, this research underscores the undeniable influence of cloud strategy implementation on various industries and the ongoing evolution of cloud technology. It paints a picture of a future where cloud computing will be at the heart of industry operations, driving business growth, innovation, and success.

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## LIST OF ABBREVIATIONS

IT	Information Technology
SMEs	Small and Medium-sized Enterprises
ICT	Information and Communication Technology
CAPEX	Capital Expenditure
AI	Artificial Intelligence
ML	Machine Learning
IoT	Internet of Things
R&D	Research and Development
HR	Human Resources
ERP	Enterprise Resource Planning
CRM	Customer Relationship Management
SaaS	Software as a Service
IaaS	Infrastructure as a Service
PaaS	Platform as a Service
ROI	Return on Investment
CC	Cloud Computing

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## **CHAPTER 1**

### **1.1 Introduction**

The digital revolution that occurred in the 21st century ushered in an age that was marked by change, innovation, and disruption. This shift in paradigm occurred across all different types of businesses. This upheaval has been partly driven by the introduction and widespread adoption of cloud computing, a force that stands as a power that is definitively a catalyst for change. According to Furht and Escalante (2016), the National Institute of Standards and Technology (NIST) defines cloud computing as a model that enables convenient, on-demand network access to a shared pool of configurable computing resources (networks, servers, storage, applications, and services). These resources can be rapidly provisioned and released with minimal management effort or interaction from the service provider.

The transformational potential of cloud computing makes it very necessary to investigate the significant influence that it has made on a variety of business sectors. The purpose of this study is to shed light on the consequences of implementing cloud strategy across varied industries such as healthcare, banking, retail, and manufacturing, each of which bears its own set of unique problems and expectations. The adaptability of cloud computing, on the other hand, makes it possible to create solutions that are specifically tailored to meet these requirements. For example, cloud computing has helped enhance patient care, data administration, cooperation among healthcare workers, and the development of new technologies such as telemedicine and diagnostic systems driven by artificial intelligence (Yates et al., 2019). Because of the tremendous simplification of procedures and workflows brought about by this innovation, healthcare is now both more accessible and more efficient.

In a similar vein, the impact that cloud technology has played in the banking sector, where data security and real-time processing are of the utmost significance, has been absolutely transformational. According to Chou et al. (2018), it has made it easier to share data in a safe manner and do analytics in real time, which has significantly improved decision-making procedures, risk management, and the overall quality of the customer experience. According to Pantano et al. (2017), organizations have begun to use the potential of cloud computing in order to provide improved customer experiences, simplify omnichannel strategies, optimize supply chain management, and accelerate digital marketing campaigns. The proliferation of e-

commerce and online purchasing has significantly increased the need for cloud-based solutions in the retail industry.

In addition, the manufacturing sector, which is sometimes regarded as the foundation of any economy, has also undergone a tremendous shift as a direct result of the introduction of cloud computing. According to Tao et al. (2018), the use of cloud technology in industrial processes, automation, real-time monitoring, and predictive maintenance has resulted in an industry that is more robust, efficient, and productive. The ongoing development of cloud technology within the context of the wider business ecosystem is another important topic that is investigated in depth by this study. It is fascinating to examine how cloud computing has evolved from its early beginnings as a straightforward answer to the problem of data storage to its current role as a crucial agent in the process of digital transformation.

According to Fox et al. (2017), the progression of cloud computing models from Software-as-a-Service (SaaS) to more sophisticated models such as Platform-as-a-Service (PaaS) and Infrastructure-as-a-Service (IaaS) speaks volumes about the increasing complexity and capabilities of cloud technologies. According to Gill et al. (2016), businesses are increasingly embracing hybrid and multi-cloud strategies, which allow them to have more flexibility in selecting which cloud services to make use of depending on the specific requirements of their business. (Yousefpour et al., 2019) New developments in the field of cloud computing, such as edge computing and serverless computing, have the potential to further alter several business fields and offer a fresh facet to the ever-changing landscape of cloud computing. Despite this, there are several obstacles to overcome before cloud computing can be used in its full capacity. According to Alashoor et al.'s research from 2020, important obstacles include issues about data security and privacy, worries about regulatory compliance, and the need for worker upskilling and training.

However, the findings of this study suggest that despite these hurdles, companies are still able to take use of the tremendous potential that cloud computing provides if they have a cloud strategy that is well-articulated, effective change management, and responsive regulation in place. In conclusion, this introduction offers a fundamental knowledge of the enormous influence of cloud strategy implementation across a variety of sectors, so laying the groundwork for a more in-depth investigation of the persistent expansion of cloud technology in the commercial sector.

## 1.2 Context

The last decade has seen the rise of cloud computing, which has ushered in a new age of digital transformation by upending the old patterns of commercial operations. Notably, it has reduced entry barriers in many industries by enabling companies to take use of sophisticated technology infrastructures with little to no initial expenditure. This has far-reaching consequences for sectors as diverse as healthcare, banking, retail, and manufacturing, all of which have distinctive operating demands and difficulties. Physical records were not only inconvenient to preserve but also to exchange across various healthcare providers; this led to the old style of patient data management being abandoned. However, with the rise of cloud computing, it has become feasible to store massive volumes of patient data in a way that is both private and readily accessible and shared. Telemedicine and AI-driven diagnostics are just two examples of how the healthcare industry has benefited from the digital revolution. Better patient outcomes have been documented as a result of healthcare practitioners' enhanced ability to work together thanks to cloud computing.

The financial sector has also reaped several rewards from adopting a cloud approach. Due to the sluggish and complicated nature of data processing, traditional banking methods were rife with inefficiencies. Cloud computing has allowed financial institutions to use real-time data analytics and communicate data safely, leading to better risk management and decision-making (Chou et al., 2018). Fintech firms, which are shaking up the financial industry with new, customer-focused approaches, have risen in part because of the infrastructure given by cloud computing. Cloud computing has been a game-changer for retail companies. Cloud computing has helped retailers improve their supply chain efficiency, implement more effective omnichannel strategies, and expand their digital marketing reach. The cloud has also helped businesses gain an advantage by letting them tailor their offerings to each individual client and respond rapidly to changes in consumer preferences.

There have been major advancements in manufacturing due to the use of cloud technologies. Cloud computing has allowed manufacturers to improve automation, real-time monitoring of production, and equipment maintenance. More divisions inside manufacturing companies may now work together thanks to cloud computing, which boosts productivity. But cloud computing's effect is felt well beyond the sectors in which it is used. As a result, cloud

computing is constantly developing. Data storage and accessibility (SaaS model) were key to the initial conception of cloud computing. Since its inception, this idea has expanded to meet a wider variety of business requirements by including platform services (PaaS model) and infrastructure services (IaaS model).

Hybrid and multi-cloud methods allow enterprises to use a variety of cloud services to meet their unique requirements, hence they are becoming more popular. New developments in cloud computing, such as edge computing and serverless computing, might significantly alter business practices in the near future. But there have been difficulties along the way to this change. Significant barriers to mainstream adoption of cloud methods have evolved due to concerns about data security, privacy, regulatory compliance, and worker upskilling. Despite these obstacles, several sectors have found success with cloud strategies, reaping advantages such as increased cooperation and creativity as well as greater operational efficiency and adaptability. The development of cloud computing is undeniably changing the corporate environment, giving companies a potent tool for navigating the challenges of the digital era.

### **1.3 Aim**

The aim of this research is to examine and clarify the revolutionary effects of adopting a cloud strategy across different sectors, as well as to trace the development of cloud computing in the commercial sphere. The purpose is to provide a thorough comprehension of the forces driving the transition to cloud computing and the ways in which many industries are using this technology to improve their own processes and products.

The basic aim is to analyse the way in which cloud methods have altered the foundations of important sectors including healthcare, banking, retail, and manufacturing. The goal is to understand how cloud computing has helped various sectors simplify operations, reduce costs, make data-driven decisions, and improve stakeholder cooperation. The study's secondary goal is to highlight the many ways in which businesses might profit from cloud computing. Such advantages include reduced infrastructure costs, enhanced teamwork and output, and portability (i.e., the ability to access data and apps from anywhere). To demonstrate the breadth and depth of these benefits across industries, we will examine real-world case studies.

The research also intends to reveal the obstacles that businesses confront and the methods they use to overcome them during cloud migration. Data security and privacy worries, interoperability problems, and the requirement to comply with regulations are just a few examples. An in-depth familiarity with these difficulties will help in the development of efficient cloud strategies and the reduction of associated risks.

Second, this research intends to track the development of cloud computing from its infancy in the commercial sector to the present day. We want to look at how SaaS evolved into PaaS and IaaS to see how services have become more complicated and adaptable to meet the needs of businesses. Further developments, such as multi-cloud and hybrid cloud solutions, have given enterprises more options and adaptability than ever before. This is done so that emerging cloud computing trends like edge computing and serverless architectures may be investigated. Understanding the implications of these developments for the future of business is crucial.

The ultimate goal is to provide useful insights that may help sectors and enterprises along their cloud journey, in addition to documenting and analysing the effects and development of cloud technology. Our goal is to give a road map, based on past experiences and predictions of future developments, that businesses can use to safely and efficiently use the full potential of cloud computing. This research was conducted with the ultimate goal of providing a reference for the business community on the effects and development of cloud computing. We hope that by systematically analysing many aspects of this topic, we may give a comprehensive knowledge that can direct future studies and real-world applications.

## 1.4 Objective

The main objective of this research is to evaluate the effects of adopting cloud strategies across different sectors. Understanding how cloud computing has transformed company operations, data management, teamwork, and general operational efficiency is necessary for this. Moreover, the objectives are mentioned below as:

- I. **Analyse the Transformation:** To do this, we will assess how the incorporation of cloud services has altered conventional operational paradigms. This involves analysing the operational advantages brought about by the integration of cloud technology into

various sectors' infrastructures, including healthcare, banking, retail, and manufacturing.

- II. **Identify Benefits and Challenges:** We'll try to pinpoint both the advantages and disadvantages of using the cloud. We may better grasp how these advantages and difficulties appear in various industries by looking at real-world case studies. We can also learn how businesses have handled these tricky dynamics.
- III. **Understanding Evolution:** A further important goal is to comprehend how cloud computing has developed in relation to commercial settings. Our goal is to chart the evolution of software as a service (SaaS) model from the most basic forms to those that are more sophisticated, including platform as a service (PaaS) and infrastructure as a service (IaaS).
- IV. **Examine Future Trends:** In addition, we'll look at upcoming developments in cloud computing, such as the development of serverless architectures and the advent of edge computing. We may more accurately predict the direction of business technology by recognizing and comprehending these tendencies.
- V. **Produce Actionable Insights:** The ultimate goal is to produce actionable business insights. We can provide useful knowledge that organizations may utilize to guide their own cloud plans by comprehending the evolution, advantages, problems, and future of cloud technology.

With the help of these objectives, the research seeks to provide a thorough examination of the subject, providing a better comprehension of the function of cloud technology in contemporary businesses and its potential for future applications.

## 1.5 Hypothesis

The core premise of this research is that adopting cloud tactics has a revolutionary effect on many different sectors, resulting in massive gains in productivity, cost savings, and new ideas. The inherent advantages of cloud computing, such as improved process efficiency, collaboration capabilities, scalability, and flexibility, provide the foundation for this concept.

In addition, this hypothesis assumes that the widespread use of cloud computing would spur innovation, making for a more flexible and responsive corporate climate that can meet the needs of an ever-evolving marketplace. Finally, it is projected that companies will continue to progressively depend on cloud solutions owing to the overwhelming benefits and the constant improvements in the sector, despite the possible obstacles such as data security, interoperability concerns, and regulatory compliance.



## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Technological changes in computing**

Water, electricity, gas, and telephone networks are just few of the essential services that may be accessed at anytime and anywhere in the world. These services are crucial in the current world, especially given the option to pay only for what one really uses. Computers are widely predicted to join this group of critical resources in the not-too-distant future. Computing services are similar in that they provide instantaneous access to customers without requiring knowledge of the underlying complicated infrastructural system or the process by which services are delivered (Buyya, Yeo, Venugopal, Broberg, & Brandic, 2009).

Leonard Kleinrock, when discussing the development of ARPANET (the forerunner of the Internet), predicted the eventual rise of "computing as a service" in 1969. He predicted that, as technology advanced, "computer utilities" would spring up to provide services to households and businesses, just as electric and telephone companies do now.

Improvements in computing paradigms such as cluster computing, grid computing, and most recently cloud computing are bringing this vision closer to fruition. The concept of cloud computing has been around for a while, but it has only just begun to acquire momentum in the IT industry. Many companies, however, lacked a clear understanding of its function and possible advantages. This is because, as of 2012, the underlying technologies needed to properly reap cloud computing's advantages were still in their infancy.

Cloud computing is the result of several years of study into topics such as virtualization, distributed computing, utility computing, networking, and more recent developments in web and software services. Two parallel developments—the improvement and widespread availability of internet services and the development of virtualization tools and cloud computing infrastructure—have converged to form this new normal. This second route is characterized by the availability of computing resources on demand, as a service.

## **2.2 Definition of Cloud Computing**

An individual's understanding of "Cloud computing" will be colored by their prior experiences, worldview, and level of familiarity with the Cloud. According to Forrester Inc., "cloud computing is the delivery of typically on-premises IT capabilities over the internet using a pay-as-you-go and self-service model".

The NIST (National Institute of Standards and Technology) explains cloud computing in further detail. The National Institute of Standards and Technology defines it as "a model that facilitates ubiquitous, convenient, on-demand network access to a shared pool of adjustable computing resources such as networks, servers, storage, applications, and services" (Mell & Grance, 2011). Below, we'll go through how NIST further categorizes cloud computing based on its three service models, four deployment approaches, and five core features.

## **2.3 The Technical Part of the Cloud**

The five defining qualities of cloud computing set it apart from previous computing paradigms in a fundamental way. It is essential to have a solid understanding of the following distinctive characteristics of the cloud in order to appreciate the cloud's significance for companies and individuals:

On-demand self-service allows users of cloud computing to independently arrange computer resources, removing the need for customers to have direct contact with the cloud's service provider.

Broad network access: Computing resources may be accessed across networks such as the Internet from a wide variety of devices including smartphones, tablets, laptops, and other digital devices. This kind of access is referred to as "broad network access."

The precise location of the resources that are employed by a cloud user is abstracted. This allows for resource pooling with geographical independence. In addition, in order to fulfil their service promises to a number of different clients, service providers use virtualization and multi-tenancy to share the resources of cloud computing.

Rapid elasticity means that customers of cloud computing services are able to scale their processing power up or down depending on their need. One of the most important characteristics is the ability to freely scale up or down in response to changes in demand.

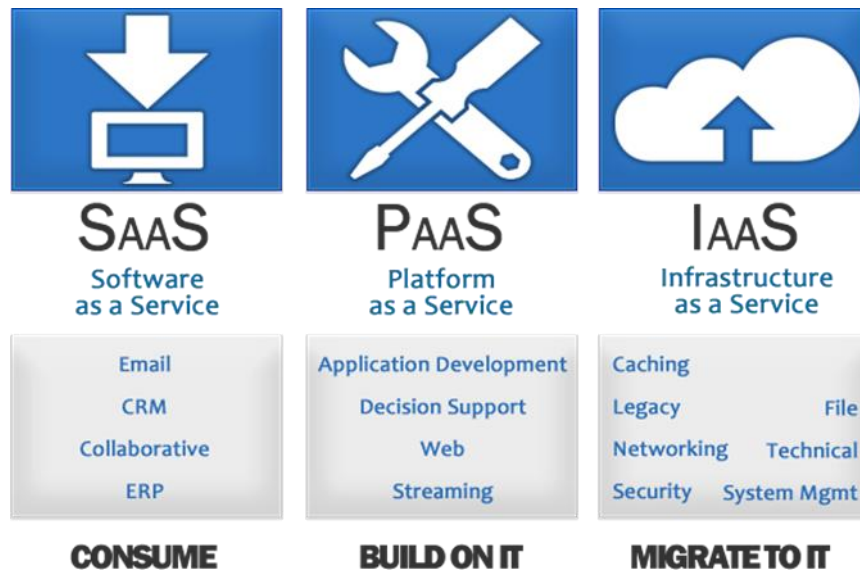
Users are invoiced according to their actual utilization of computer resources including storage, processing power, and bandwidth using a measured service. This kind of service is also known as "pay as you go" or "pay as you go metered." Users are able to keep track of and manage how often they use the service.

The term "Software as a Service" (SaaS), "Platform as a Service" (PaaS), and "Infrastructure as a Service" (IaaS) are the three service models that are included in cloud computing. These models are meant to meet the varying requirements of individual customers.

Software as a Service, often known as SaaS, enables users of cloud computing to access programs hosted by the service provider, operate on the provider's infrastructure, and utilize a variety of devices to access the apps through the internet. Due to this, the user's device does not need any software installation or upgrades since the provider assures that the programs are always at the most recent version. Companies are only billed for the amount of software they actually use, which may result in significant cost reductions for the company. Google Apps, Microsoft Office 365, Salesforce, LinkedIn and Dropbox are a few examples of software that is offered as a service.

Users are able to design, install, manage, and run applications on the infrastructure that is provided by the service provider while using Platform as a Service (PaaS). Providers often provide support for a wide variety of programming languages, libraries, and specialized tools in order to assist and speed application development in a manner that is both cost-effective and efficient. PaaS products include the likes of Google App Engine, Microsoft Azure Web Apps, and Amazon Elastic Beanstalk.

The term "Infrastructure as a Service," or "IaaS," refers to a model that enables consumers to have access to an all-encompassing virtual data center that offers a variety of computer resources such as storage, servers, bandwidth, and networks. IaaS services are shown by companies like as Amazon, Rackspace, and CloudVPS, who provide virtual private servers, as well as storage providers such as Amazon, Mozy, and Rackspace, which offer cloud storage.



*Figure 2-1: Computing in the Cloud: Multiple Stacks (Schaeffer, 2014)*

In recent years, other service categories have surfaced on the market in addition to the three basic ones: SaaS, PaaS, and IaaS. One of these categories is Business Process as a Service (BPaaS), which has the potential to someday take the place of Software as a Service (SaaS). BPaaS is becoming more popular among organizations because it enables them to outsource their whole business operations to a third-party service provider. Some examples of these outsourced processes include human resource management, payroll processing, and supply chain management.

The following kinds of cloud computing integration methodologies may be grouped according to their respective characteristics:

**Private Cloud:** A private cloud is a kind of cloud computing in which only a single company owns or rents the underlying cloud computing infrastructure and has access to it. The firm has the option of hosting the infrastructure either on its own premises or somewhere else entirely.

**Community Cloud:** The cloud infrastructure, whether it is located on-site or off-site, is only available to a select set of companies that share similar concerns (such as a common aim, shared security requirements, etc.). This kind of cloud may be used for private or public use. This particular group has exclusive authorization to access the cloud infrastructure.

In a public cloud, a provider controls the underlying cloud infrastructure and makes its cloud services available to big industry organizations as well as the general public for widespread usage. Anyone may take use of these services.

The cloud infrastructure is a mix of two or more integration models (private, communal, or public), with each model existing as a distinct entity but being connected by standardized or proprietary technologies. This configuration is referred to as a hybrid cloud. These models could combine elements from public, private, and community clouds.

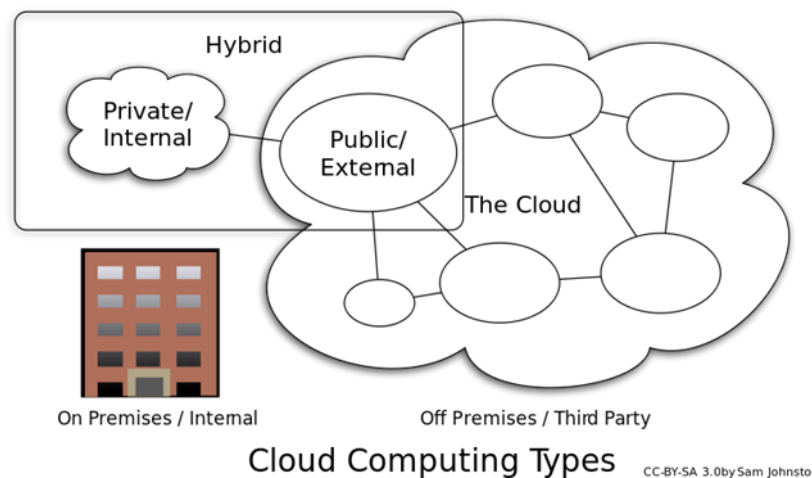


Figure 2-2: Categories of Cloud Computing (Joton, 2009)

The definition of cloud computing according to NIST can be summarized in the following figure (Figure 2.3):

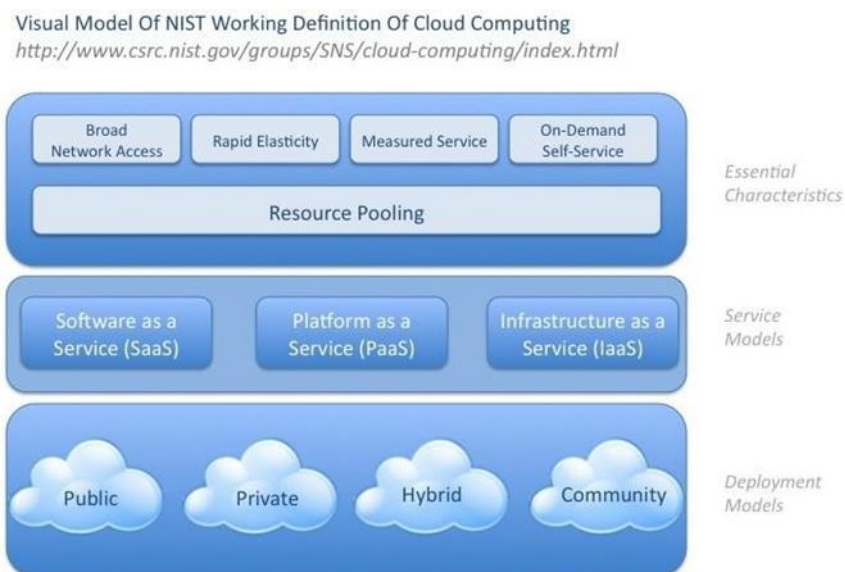


Figure 2-3: Illustration of the NIST Cloud Computing Definition in Use

## **2.4 International Case Studies**

Cloud services are quite versatile and may be used in a variety of settings, including professional and personal ones. It's possible that we're making use of cloud services without even realizing it. Software as a Service, often known as SaaS, is the kind of cloud computing that is the most well-known and straightforward to operate. Cloud computing is used by services such as Gmail and Dropbox to store user data, which improves both the quality of our personal lives and the productivity of our businesses.

The widespread use of cloud computing is shown by the proliferation of social media platforms such as Facebook, LinkedIn, and Twitter, amongst others. Companies use these platforms for a variety of purposes beyond its social capabilities, including internal communication and collaboration, as well as engaging customers. Because digital communication plays such a vital part in modern life, cloud-based email systems, which provide accessibility and mobility, are becoming more common. Web-based email is one of the cloud services that is used the most often. Users of Google Docs are able to create documents online, edit those documents along with other users in real time, and collaborate on such documents. In addition, cloud storage systems like Dropbox and Syncplicity make it easier to back up data and use it across various devices thanks to their ability to automatically sync the data.

Numerous big worldwide corporations have made investments in order to provide a wide variety of cloud computing services and solutions to individual customers as well as commercial enterprises. On this list are some of the most well-known companies in the world, such as Amazon, Microsoft, IBM, Google, Oracle, Dell, Cisco, HP, and Intel. These businesses were chosen because of the potential for them to respond to the socio-economic shifts that are occurring right now.

### **Google**

Google provides a suite of well-known cloud-based apps to its users, including Gmail, Google Drive, Google Calendar, Picasa, and Google Reader, amongst others. If you have a device that can connect to the internet, you may access these at any time and from any place you want. Users are not required to download or store any data locally since these apps run on the SaaS layer of the cloud. This eliminates the need for users to back up their data. The data centers

operated by Google are home to a vast number of apps and data archives. For instance, a school might make use of the SaaS cloud services that Google offers, as seen in Figure 2.4.

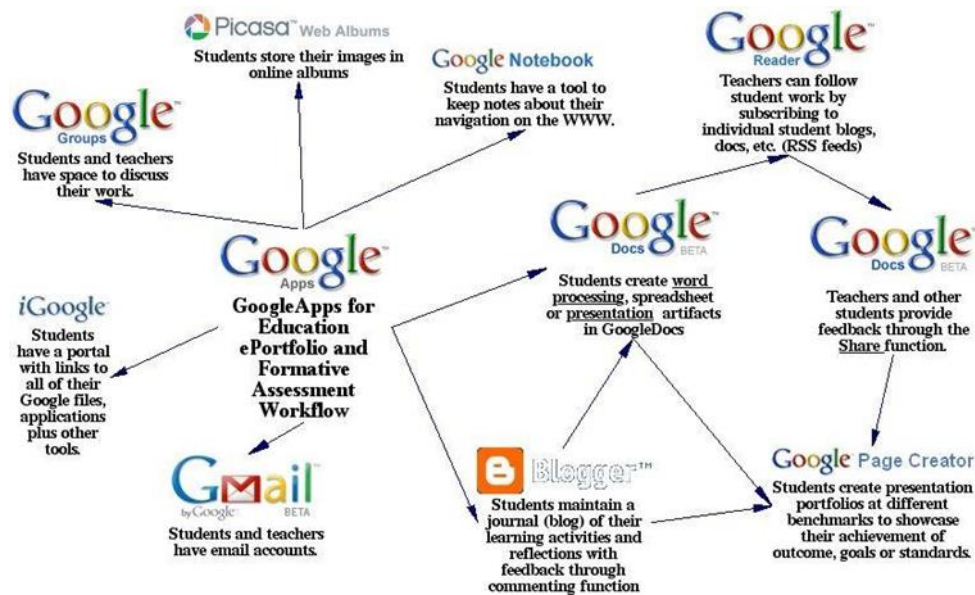


Figure 2-4: An Educational Use Case for Google Cloud Services

In addition, via its Google App Engine, Google makes it possible for software developers to create and distribute apps that make use of the company's infrastructure. This platform makes it possible to create apps in a quick and smooth manner, applications that are also easy to operate and that can expand in accordance with the expansion of the company.

## Amazon

Amazon Web Services, most often known as AWS, is a web-based service that provides adaptable cloud computing capabilities. It gives customers the ability to adjust the amount of computing resources they utilize from Amazon EC2 in a matter of minutes, according to changes in the demand for their services. Because of the scalability of this service, customers may quickly request any number of server instances as needed. This enables the program to react to fluctuations in the amount of demand placed on it. A wide variety of customized instance types are available with Amazon EC2. Applications with minimal consumption may be serviced by instances that are small and cost-effective, whereas instances designed for cluster computing are best suited for high-performance computing workloads. Virtualization provides developers with access to a diverse range of software packages, operating systems, and instance kinds to choose from. These services provide a number of advantages, the most

notable of which are elasticity, control, flexibility, and security, in addition to alternative payment methods, such as pay-as-you-go pricing or pricing based on demand. In addition to it, Amazon provides other services such as its Simple Queue Service (SQS) and its Amazon S3 as a storage service.

## Microsoft

Microsoft Azure makes all of its cloud services, including SaaS, PaaS, and IaaS, accessible via its platform. These cloud services cover all three tiers of cloud computing.

At the Software as a Service (SaaS) level, Microsoft first makes its services available not just to enterprises but also to individual customers. Popular applications such as the Bing search engine, Hotmail, and the MSN website are all examples of cloud services that are geared at individual users. On the commercial side of things, the services include the Office 365 suite, Microsoft Dynamics CRM Online, Exchange Online, Outlook Online, and a variety of other tools for teamwork and communication.



*Figure 2-5: Microsoft's cloud services for individuals*

Windows Azure, which is used for hosting and storage, and SQL Azure, which is used for database activities, are two of the most important services that Microsoft provides in relation to the PaaS paradigm. Both of these services make it possible to create an environment that is an exact replica of conventional activities that take place on-premises. This enables software developers to host their programs in an environment that is analogous to Windows Server 2008. This indicates that, much as in a conventional Windows Server 2008 environment, the



Windows Azure environment supports a variety of programming languages. These include .NET, Java, PHP, and Python, among others.



Figure 2-6: Microsoft's cloud commercial services

In relation to SQL Azure, Microsoft provides all services that are associated with databases, such as synchronizing data with other databases, doing backups, and so on.

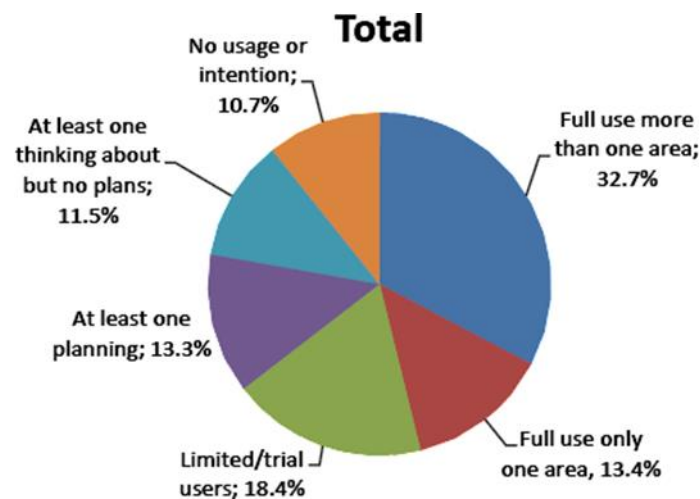
## Apple

Apple's goal was to provide its gadget users with a one-of-a-kind experience by using the capabilities of the cloud. iCloud is the name of the most recent cloud-based computing and storage product that the firm offers. This service gives customers the ability to save different sorts of material, including as programs and music, which can subsequently be viewed and downloaded on a variety of devices, including personal computers and devices based on the iOS operating system. In addition, users are able to synchronize their emails, contacts, and calendars across all of their iOS devices by using iCloud.

## 2.5 Adoption of Cloud Computing in Europe

The International Data Corporation (IDC) invited 1,562 businesses located in a total of nine different European nations to take part in an online poll that was carried out by the organization. This poll was conducted over the months of November and December 2011, and it included responses from a variety of countries, including the United Kingdom, Sweden, the Czech Republic, France, Germany, Hungary, Spain, Poland, and Italy. On the basis of the size of their respective workforces, these businesses were divided into the following four categories: those with 1-9 workers, 10-99 employees, 100-249 employees, and 250 or more employees.

The findings of the poll revealed a diverse range of acceptance and readiness levels for cloud technology across European enterprises. Companies may be divided into three groups according to their use of the cloud: those who completely use cloud technology across various application areas, those that fully utilize the cloud in a single application area, and those that only explore or make limited use of the cloud. On the other hand, enterprises that do not use cloud computing may be divided into three categories: those that are planning to adopt cloud computing, those that are considering cloud adoption but do not yet have precise plans, and lastly, those that do not use cloud computing and do not want to use cloud computing. The following graphic provides a visual representation of the several steps that comprise the adoption process.



*Figure 2-7: Increasing Cloud Usage*

The fact that 64.5% of organizations in this poll use cloud services is an intriguing finding. Businesses are expected to rely increasingly heavily on public cloud services as cloud computing becomes more commonplace.

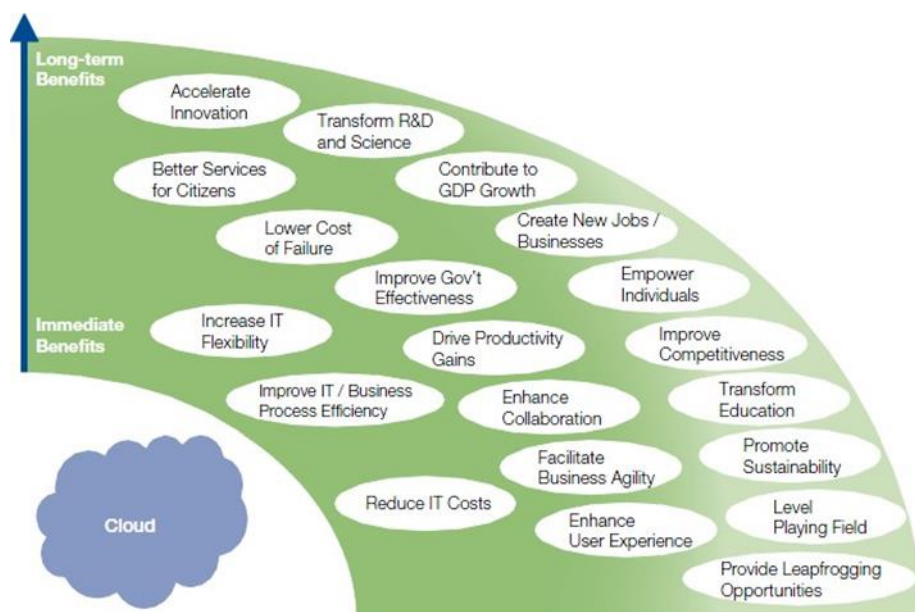
The public cloud software services market in Europe was worth around €3.5 billion in 2011, while the public cloud hardware services market was worth about €1.1 billion. According to IDC, the market for public cloud services will see a substantial expansion in 2014, with sales perhaps exceeding 11 billion euros.

Businesses spent just 1.6% of their overall IT budgets on public cloud services in 2011. Rapid progress, however, has led experts to forecast that by 2014, this percentage of the IT sector would have increased to 3.6%.

## 2.6 Potential benefits of Cloud Computing

Sometimes the advantages and possibilities of "cloud computing" are lost on enterprises and organizations because the concept is too vague. Researchers that have delved into the benefits of cloud computing say that users have often just seen the tip of the iceberg in terms of those benefits (J. Gordon & Hayashi, 2010).

Companies often exaggerate the short-term impacts of new technologies while underestimating the long-term advantages. Figure 2.8 provides a summary of the possible advantages of cloud computing, broken down into immediate and future gains.



*Figure 2-8: Potential benefits of the Cloud*

No need to go into detail about all the aforementioned advantages of cloud computing for this dissertation. This section just provides a high-level summary of the most important benefits; further information on how this technology might help start-ups is offered in Chapter 4.

Cloud computing's utility model primarily simplifies and decreases IT expenses. If you use the cloud, you won't need to spend money setting up servers, data storage, and other on-premises

IT components. As a result, companies may reinvest the money they would have spent on capital expenses into day-to-day operations. Costs are incurred on a per-use basis, making the payment system adaptable (pay as you go). Cloud users also don't have to worry about upgrading or maintaining their systems. The reduced overall cost of using cloud services for data storage and processing capacity might be quite enticing, especially in cases of high and sudden fluctuations in client demand.

While cost reductions in information technology are a significant benefit of cloud computing, the technology's indirect advantages, such as letting firms concentrate on their core competencies, are just as compelling. By reducing the complexity of IT, companies are free to focus on what really matters rather than being bogged down by technology. This change has the potential to boost productivity, speed up the achievement of business objectives, sharpen operational efficacy, and boost the company's overall performance.

In terms of IT scalability and adaptability, firms may have instantaneous access to the exact amount of computing resources they need, without having to over- or under-buy. By using the scalability of the cloud and paying only for the resources used, businesses may fulfil peak needs without spending a lot of money on infrastructure changes. When opposed to the conventional IT technique, which may take weeks or months owing to the time required to acquire and set up servers, the development of an application using cloud-hosted services is quicker, cheaper, and simpler. The majority of cloud services accept credit card payments and provide instant access after the payment is processed.

The flexibility and scalability afforded by cloud computing allow businesses to respond quickly to market shifts and implement novel ideas into their processes, goods, and services. Cloud computing is not only useful for the IT and telecom industries, but also for media, healthcare, education/research, manufacturing, and government.



Source: Cloud Computing Survey 2009, World Economic Forum and Accenture

*Figure 2-9: Multiple sectors may benefit from using the cloud.*

## 2.7 Concerns and Challenges

The cloud, like all other kinds of technological advancement, is fraught with its own particular set of challenges and concerns. Because of the potential for these hurdles to hinder adoption, it is imperative that they be addressed and that solutions be found to overcome them.

Many companies have been hesitant to use cloud computing because of privacy and security concerns associated with the technology. Because consumer data may be stored on and distributed over numerous shared computers, businesses that have data that is highly sensitive may be dissuaded from embracing the technology of cloud computing. Cloud service providers, on the other hand, have the financial resources to invest in the most cutting-edge hardware and software to address this issue. Hybrid cloud computing enables companies to maintain their sensitive data on-premises while still taking use of the scalability and cost-effectiveness of cloud computing.

The possibility of it being difficult to transition between different cloud providers is a source of extra concern over vendor lock-in. Changing cloud providers may be difficult and time-consuming, especially if you are moving data into or out of the cloud. In addition, since there are not enough standards in place, it is possible that the clouds will be unable to interact with one another. This lock-in might have a technological cause, but it could also have been caused by something at the institutional level.

Compliance is a big concern for consumers of cloud computing services since governmental compliance requirements may vary even from one country to another as a result of the different laws and regulations imposed by governments. In addition, corporations have their own compliance rules, and cloud services must adhere to those norms.

One of the challenges is that cloud computing has the potential to disrupt the regular operating procedure of the information technology department. This is only one of the issues. Therefore, firms that are shifting to the cloud need to not only have managerial capabilities, but also new skill sets and support services. It is possible to prevent the lock-in of a vendor by making appropriate contingency planning.

It's possible that cloud service providers may update their policies in response to the growing demand for their products and services. The term "cloud computing" refers to a group of technologies that may be configured in a variety of distinct ways. It is also vital for the companies studying its adoption to do research into the benefits and drawbacks of the different configurations, service, and deployment models, as well as the underlying hurdles and risks. Last but not least, companies need to look into the service level agreement, often known as a SLA (Radack, 2012). This document outlines the requirements that each party is obligated to fulfil under the contract.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.1 Methodology**

The study that is being suggested will use a mixed-methods approach, which will synergistically integrate quantitative and qualitative approaches to create a thorough analysis of the effect that the deployment of cloud strategy has had on various businesses. It has been determined that the use of a mixed-methods approach is required for this study because it enables a more comprehensive comprehension of the phenomenon. This is accomplished not only through the establishment of statistical relationships, but also through the provision of rich descriptive data that can be used to investigate the context and experiences that are associated with the implementation of a cloud strategy.

In the first place, the research is going to make use of a comparative analysis in order to quantitatively measure the impact that implementing an Amazon Web Services (AWS) cloud strategy has on key performance indicators such as operational efficiency, service delivery speed, profitability, and customer satisfaction across a variety of different industries. This would require gathering and evaluating relevant secondary data from a selection of typical organizations operating in industries such as finance, healthcare, manufacturing, logistics, retail, and information technology. Examples of such data include corporate financial reports and operational performance measurements.

Second, in order to supplement the findings of the quantitative analysis, the research will also make use of qualitative methodologies, such as case studies and in-depth literature surveys. These case studies will look into particular cases of organizations that have implemented AWS cloud technology, elaborating on the actual experiences, problems, and opportunities that have arisen during and after the deployment process.

In addition to the case studies, structured literature surveys will be done with key decision-makers and stakeholders engaged in the process of implementing AWS. The purpose of these literature surveys is to acquire insights into the motives for adopting AWS, the procedures and obstacles of implementation, the perceived effect on company performance, and future

predictions linked to further cloud adoption. The data gathered from literature surveys will be transcribed and then submitted to thematic analysis in order to recognize and analyse patterns and trends. The companies in the research will be chosen using the process of purposive sampling for the study. This technique of sampling was chosen since we had prior information of both the population and the objectives of the study. In this scenario, firms who have implemented AWS cloud services across the main sectors that have been identified are picked for the study because they are most likely to give the most helpful and relevant data.

The quantitative data that was gathered will be evaluated using statistical methods, such as regression analysis, in order to establish the correlations and possible causative linkages between the execution of the AWS cloud strategy and the key performance metrics that were selected. On the other hand, the qualitative data will be put through a process called thematic analysis, which involves the data being coded and classified in order to find recurring themes and patterns. This two-pronged approach to analysing the data will make it possible for the research to give an in-depth and comprehensive picture of the effect that the installation of an AWS cloud strategy has had across a variety of business sectors. In general, the methodological approach will guarantee the creation of reliable and nuanced insights that not only quantify the effect of AWS cloud technology in business sectors but also capture the subjective experiences and subtle complexity that are connected with its adoption. These insights will be generated as a result of the research.

### **3.2 Data Collection**

A method of data collecting that is both precise and all-encompassing is an essential component of the research study that bears the title "Impact of Cloud Strategy Implementation on Different Industries." The purpose of this procedure is to collect the broad and reliable data essential to assess and evaluate the development and effect of cloud technology provided by Amazon Web Services (AWS) across a variety of different business sectors.



### **3.2.1 Quantitative Data Collection**

#### **Financial Reports**

The amassing of quantitative data is the first stage of this process, which entails the gathering of various types of data. The corporate financial reports of the firms that took part in the study constitute one of the most important sources of this information. These reports, which comprise data such as income statements, balance sheets, cash flow statements, and comments to the financial statements, will give significant insights into the firms' financial health and will be of great assistance in making business decisions. More specifically, the assessment of the monetary effect that the deployment of AWS cloud technology has on the profitability of businesses is made possible by these statistics.

#### **Metrics for the Operational Performance of the Operation**

After then, data collection for the operational performance measures will begin. A multitude of performance metrics may be monitored by enterprises thanks to the suite of monitoring tools that is made available by AWS. We will be putting a lot of emphasis on these indicators, which include service efficiency, resource use, and response times. The purpose of the data that was gathered is to provide a quantitative analysis of the operational effect and increase in efficiency, if any, that resulted from the implementation of AWS across a variety of different businesses.

#### **Surveys on the Satisfaction of the Customers**

The results of customer satisfaction surveys will be analysed to see how the AWS cloud approach affects the delivery of services to customers as well as their overall experience with those services. Following the installation of AWS, these surveys, which are often carried out by the businesses themselves or by independent market research agencies, provide essential insights into the ways in which consumers perceive the quality of service delivery provided by the company as well as its responsiveness.

### **3.2.2 Qualitative Data Collection**

#### **Studies of Actual Cases**

The research will depend on qualitative data acquired via case studies and literature surveys to augment the quantitative data and give a more nuanced picture of the effect of implementing an AWS cloud strategy. This will be accomplished by providing a comparison between the two sets of data. These case studies will throw light on particular cases of organizations that have moved to AWS cloud services, painting a full narrative of their journey and the consequences that this shift has had on their company operations. In addition, these case studies will highlight specific instances of businesses that have converted to AWS cloud services. The companies that are chosen to add in these case studies will be chosen because they are typical of their respective sectors and have made significant use of the cloud services offered by AWS.

#### **Conducted Literature Surveys**

In addition to case studies, we will also conduct structured literature surveys with key decision-makers inside these firms who have managed the AWS installation process. The purpose of these structured literature surveys, which were directed by a pre-established series of questions, was to dive further into the motives for adopting cloud technology, the problems faced throughout the deployment process, as well as the perceived effects and future expectations.

### **3.2.3 The Accumulation of Additional Data**

#### **Cost and Usage Reports for Amazon Web Services**

In addition, AWS cost and usage reports will be received. These reports will show the charges connected with the AWS services accessed by a firm as well as the specifics of how those services were used. These statistics are essential for determining whether or not the adoption of AWS is cost-effective and, subsequently, how that determination will affect the financial performance of the organizations. We can have a better idea of the potential monetary effects of adopting AWS if we conduct an investigation into the expenses that are involved and weigh those findings against the advantages that are thought to result.

## **Considerations of a Moral Nature**

Taking into account the breadth and depth of this research, the method of data collecting will be guided by a number of ethical issues. The people will be asked for their informed permission before the literature surveys take place. This will ensure that they are aware of the objectives of the study as well as how the information they give will be used. In order to protect the privacy as well as the sensitive data that is gathered, stringent confidentiality procedures are going to be put into place. When dealing with secondary data, such as operational metrics and financial reports, attention shall be made to protect the intellectual property rights of the data owners.

So, the approach of data collecting that was created for this research is extensive and precise. It combines a wide variety of data sources to provide a multi-dimensional knowledge of the influence that the deployment of an AWS cloud strategy has on various businesses. The data obtained will help to give a thorough study that will not only measure but also narrate the journey of AWS cloud technology adoption across a variety of business sectors. This will be accomplished by using a careful combination of both quantitative and qualitative methodologies to gather the necessary information.

### **3.3 Data Analysis**

The data analysis portion of the research study with the working title "Impact of Cloud Strategy Implementation on Different Industries" focuses primarily on the development and implications of cloud technology provided by Amazon Web Services (AWS) across a variety of different types of commercial enterprises. The process of data analysis entails doing a thorough examination of the qualitative and quantitative data that was acquired. The goal of this inquiry is to discover significant insights that speak to the goals of the study.

The quantitative data that was obtained, such as financial records, operational indicators, and customer satisfaction surveys, would first and foremost be submitted to a stringent process of statistical analysis. This process will be quite thorough. In the context of the financial records, ratio analysis methods will be used to create a number of financial ratios, which will subsequently be compared both before and after the deployment of AWS. These ratios, including the net profit margin, return on assets, and current ratio, amongst others, will serve

to detect any major changes in the businesses' financial performance that may be related with the deployment of AWS. These ratios will also help to identify any potential risks associated with the use of AWS.

Time series analysis, which may detect patterns over time and illustrate any gains or losses in performance after the adoption of AWS, will be used to examine operational metrics, which record the performance of the businesses' AWS cloud operations. This will be done in order to demonstrate whether or not performance has improved following the implementation of AWS. Metrics like load times, server downtime, resource consumption, and other similar things could fall under this category.

The study will aim on determining whether or not there are significant connections or dependencies between the installation of AWS and customer satisfaction levels while examining the data from customer satisfaction surveys. Statistical software such as SPSS will be used in order to carry out statistical tests and analyses like the Chi-square for testing independence and the correlation analysis.

In addition, regression analysis will be used in order to investigate the connection between the execution of the AWS cloud strategy and the key performance indicators that have been determined. This method provides a predictive model for the effects of putting AWS into place by enabling the prediction of one variable based on the knowledge of one or more other factors.

The qualitative data that was produced from the case studies and literature surveys will be subjected to thematic analysis, in contrast to the quantitative data that was analysed. Performing this step requires locating recurring themes or patterns among the qualitative data sets. Case studies will be analysed in great detail in order to offer a comprehensive grasp of the conditions surrounding the deployment of AWS in a variety of businesses and fields. In this section, we will focus on the discoveries made on the experiences, problems, rewards, and possibilities that arose throughout the implementation process.

In a similar manner, the analysis of the data gathered from literature surveys will begin with the transcription of the literature surveys themselves, followed by the codification of the data. The ideas and classifications that are derived from the data will serve as the basis for the generation of the codes, which will then be arranged into themes. This technique makes it

possible for patterns and trends in the data to become apparent, which may provide insight into the motives, problems, and consequences of using AWS.

Triangulation is a procedure that is used to strengthen the credibility and validity of the research results, and it will be employed in the last step of the data analysis process. This is accomplished by cross-verifying the conclusions that were produced through using a variety of data sources and methodologies for the collecting of data. In this part of the study, the results from the analysis of the quantitative data will be compared and contrasted with the insights obtained from the analysis of the qualitative data. This all-encompassing method makes it possible to get a more complete comprehension of the effects of putting AWS into action by taking into account not only numerical data but also the perspectives of individual users.

Ethical standards of research shall be adhered to throughout the whole of the process of data analysis in the study. This involves preserving the privacy and confidentiality at all times, as well as the safe storage and processing of any data collected. We are going to make an effort to eliminate any possible biases in the interpretation of the data, and they are going to be completely honest about the techniques of analysis and any potential limitations.

In a nutshell the process of analysing the data for this research will be exhaustive and multifaceted, integrating a variety of methodologies in order to evaluate the influence that the installation of an AWS cloud strategy has on a variety of different businesses. The study attempts to provide a complete and accurate picture of the progress and implications of AWS cloud technology in a variety of business sectors by using statistical testing, thematic analysis, and triangulation.

### **3.4 Research Ethics**

In the process of conducting the study on the "Impact of Cloud Strategy Implementation on Different Industries," with a particular emphasis on the AWS cloud technology, upholding high ethical standards is an essential component that cannot be compromised. Ethical conduct in research is essential to ensuring that findings are trustworthy and dependable. It also helps ensure the safety of research and maintains the validity of the investigation as a whole.

### **3.4.1 Acknowledgment of Consent**

#### **Consent After Being Informed**

Consent given voluntarily and after being fully informed is a crucial component of ethical research. Before any kind of data gathering, whether it be literature surveys or accessing financial information, all of the people engaged will first be properly educated about the aims, methodology, and possible repercussions of the research. This will take place before any sort of data collection. They will be given the opportunity to consent to take part in the research or decline to do so, with the knowledge that they are free to change their minds at any time without incurring any penalties.

#### **Voluntary Basis**

Literature that is entirely voluntary will be an essential component of this study. No research literature will be forced or otherwise influenced into taking part in the research in any way, shape, or form. This protects the validity of the information that was gathered by ensuring that it was not distorted or prejudiced as a result of undue influence being exerted on the research.

### **3.4.2 Privacy and secrecy**

#### **Anonymity**

It is essential that the anonymity of research to be preserved, particularly with regard to individual literature surveys. In order to guarantee this, all of the reports and publications that are associated with this project will make use of codes or pseudonyms when referring to their firms, or any other information that may be used to identify them.

#### **Maintaining Complete Secrecy**

The confidentiality of the for literature will be a top priority. The study team will be the only ones who have access to the data while it is being safely preserved. In addition, no published work will include any particular facts that may possibly identify a firm. These data will be kept confidential.

## **Respect for the Ownership of Intellectual Property**

The investigation shall operate in accordance with the tenets of intellectual property rights at all times. We want to make responsible use of secondary data sources such as financial reports and operational indicators. Any use of content that is protected by intellectual property rights will be carried out with the necessary permits, and the origins of any data or information will be appropriately cited.

## **Protection from Potential Harm**

During the course of the investigation, there will take every precaution to guarantee that none of the thing will suffer any kind of adverse effects as a result of taking part in the research. Within the scope of this investigation, the term "harm" may refer to any circumstance that has a detrimental effect on the health, reputation, or business operations of an individual as a direct consequence of their involvement.

### **3.4.3 Accuracy and openness**

#### **Data Integrity**

The reliability of the information that is gathered will be of the utmost importance. This ensures that there will be no fictitious data, data that has been falsified, or data that has been misrepresented. All of the data will be documented and published in an accurate manner, guaranteeing that the conclusions drawn from the study will be founded on truthful and reliable information.

#### **Openness concerning Research Methods**

The study will have a high degree of openness about its methods throughout its course of conduct. It will be feasible for other researchers to conduct their own versions of the study thanks to the comprehensive description and elaboration of all data gathering and analysis procedures. The technique will also include an acknowledgment of any possible biases or limitations it may have.

## **Approval from an Ethical Committee**

An ethics review board will be asked to provide its stamp of approval to the research proposal before the study can get underway. The proposal will include the methodologies that will be used as well as the ethical factors that will be taken into account. This objective evaluation is an essential stage in the process of verifying that the study complies with the generally recognized ethical norms applicable to research.

To summarize, the investigation into the "Impact of Cloud Strategy Implementation on Different Industries" will adhere to a stringent ethical framework. This framework, which is based on principles such as informed consent, confidentiality, the integrity of the data, and transparency, will assure the protection of all the credibility of the data, and ultimately, the integrity of the whole research.



## **CHAPTER 4**

### **ANALYSIS**

#### **4.1 Data Presentation**

##### **4.1.1 An Overview of the Data Presentation Process**

This investigation includes the display of data as an essential component. After the data has been gathered and analysed, the results need to be presented in a manner that is understandable and unambiguous if the reader is to comprehend the significance of the findings and arrive at conclusions that have any real value.

##### **4.1.2 The Display of Quantitative Information**

###### **Exposition of the Financial Information**

The financial data that was gathered from the business financial reports will be displayed in the form of financial ratios, graphs, and charts, which will indicate changes in profitability, liquidity, and solvency both before and after the deployment of AWS cloud services. A comparison of these percentages across other businesses will provide even more insight on the monetary consequences of using AWS.

###### **The Presentation of Data Concerning Operational Performance**

Following the introduction of AWS, operational performance data will be provided using line graphs to demonstrate trends over time in server uptime, response time, and resource use. For the purpose of better visualizing the influence that AWS has on operational efficiency, comparison graphs across sectors will be deployed.

###### **The Presentation of Data Regarding Customer Satisfaction**

The findings of the customer satisfaction surveys will be presented in the form of bar graphs and pie charts, respectively. These charts and graphs will emphasize the average levels of

satisfaction as well as the distribution of satisfaction ratings among consumers. Scatter plots will be used to display the findings of correlation and regression, which will demonstrate the connection between the use of AWS and the level of happiness experienced by customers.

#### **4.1.3 Qualitative Information**

##### **Presentation of the Results of the Case Study**

The results of the case study will be given in narrative form, along with a summary of the experiences gained by the organization because of the use of AWS cloud technology. The focus will be placed on significant events or components, recurring themes, and overarching patterns. To provide a first-person narrative of the events, it is possible, in certain instances, to utilize verbatim quotations taken from the case studies themselves.

##### **Presentation of the Data**

The findings from the literature surveys will be presented by first elaborating on the basic themes and secondary themes that surfaced from the data. It is intended to contain illustrative extracts from the literature surveys to give voice to the viewpoints, experiences, and opinions expressed by the people. To show the similarities and variations in experiences with AWS installation, comparisons will be performed across all of the literature surveys that were conducted.

#### **4.1.4 The Integration of Quantitative and Qualitative Information**

In the process of presenting the data, we will attempt to synthesis the quantitative and qualitative data to provide a comprehensive perspective of the effects of the deployment of the AWS cloud strategy. The synthesis will include making linkages between the numerical data and the experiences that companies have actually had, emphasizing how the data either confirms, expands on, or contradicts the conclusions across the various sources of data.

#### **4.1.5 Utilization of Different Types of Data Visualization Tools**

The presentation of the data will benefit greatly from the use of data visualization tools. In order to provide a visual representation of the data that is straightforward to comprehend, graphs, charts, and tables will be created using the assistance of software applications like Microsoft Excel and Tableau. A summary of the most important facts might also be presented using infographics, which provide a format that is both aesthetically attractive and easy to understand.

#### **4.1.6 Ensuring the Availability of Data in an Accessible Format**

In the process of presenting the results, we will make an effort to guarantee that not just those individuals who are knowledgeable in cloud technology or business are able to understand them. This will include avoiding language that is extremely technical, clarifying any technical words that are used in a clear and concise manner, and offering interpretations or explanations of the data that is given.

So, the presentation of the data for this research will make an effort to be understandable, easily available, and aesthetically interesting. The end goal is to offer an account that is both thorough and easy to grasp of the effect that the deployment of an AWS cloud strategy has across a variety of different sectors. This will make it feasible for companies, academics, and policymakers to understand and use the results.

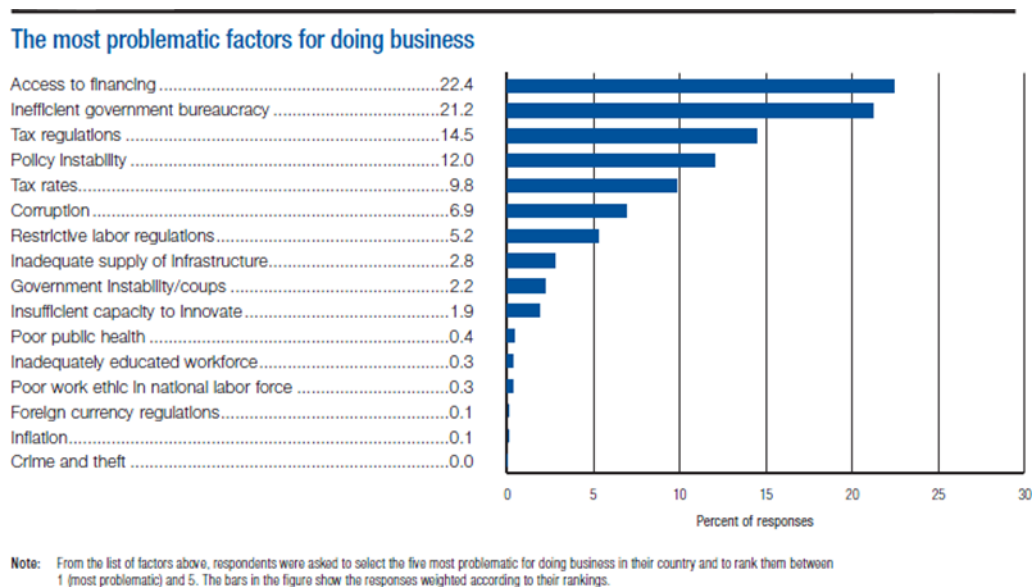
### **4.2 Case Studies**

#### **4.2.1 Entrepreneurship in Greece**

The prolonged economic crisis that has been plaguing Greece for a significant amount of time continues to have a significant impact on a variety of facets of the citizens of Greece's daily lives. This is essentially the result of the severe administrative restrictions imposed by the government of Greece, which in turn have a negative influence on local business endeavors. Greece has to strategy and pivot toward a development model that prioritizes private investments and exports as major economic drivers in order to increase its competitive advantage and strengthen its position in the global economy.

Improving the competitiveness of Greek products and services is necessary for reviving the economy. This will be an essential factor in overcoming the present economic recession and moving the country forward into a new economic phase. Because of this, the government will need to make significant cuts to the many onerous administrative restraints that are now stifling economic growth. According to Danchev et al. (2011), Greek company owners need to simultaneously focus on lowering costs while simultaneously increasing the value of their products and services.

According to the "Global Competitiveness Report 2013-2014" published by the World Economic Forum, the most significant barrier to entry for firms in Greece is the inability to get finance (Schwab, 2013) (Figure 4.1). This is one of the factors that discourages Greek company owners from starting their own companies. In Greece, there is a dearth of vital resources, which has a negative impact on the business environment.



*Figure 4-1: The main obstacles to doing business in Greece (Schwab, 2013)*

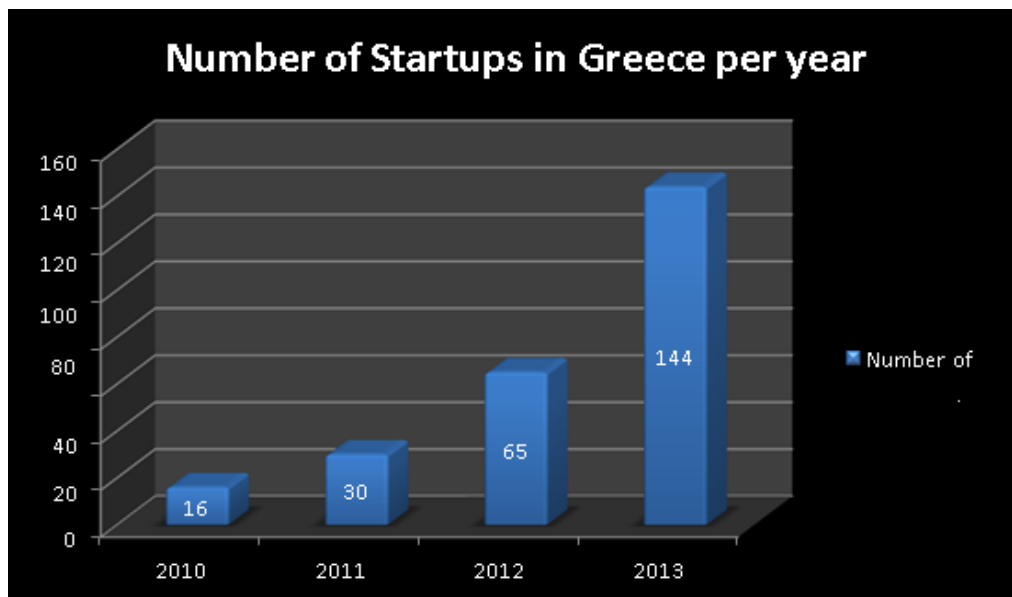
Computing in the cloud has emerged as an emerging creative technology trend that has the potential to boost the path towards a new developmental paradigm, which may serve as a stimulant for entrepreneurial activity in Greece. According to the findings of a survey conducted by the Business Software Alliance, Greece is now on an upward trend in this respect. The use of cloud computing is responsible for a significant amount, around 39%, of all technological activity in Greece. According to the findings of the poll (Cruz, 2013), more than 24 percent of people who use personal computers in the nation have some knowledge of the technologies that are involved in cloud computing. Computing in the cloud has emerged as an

emerging creative technology trend that has the potential to boost the path towards a new developmental paradigm, which may serve as a stimulant for entrepreneurial activity in Greece. According to the findings of a survey conducted by the Business Software Alliance, Greece is now on an upward trend in this respect. The use of cloud computing is responsible for a significant amount, around 39%, of all technological activity in Greece. According to the findings of the poll (Cruz, 2013), more than 24 percent of people who use personal computers in the nation have some knowledge of the technologies that are involved in cloud computing.

#### **4.2.2 Greek Start-up ecosystem**

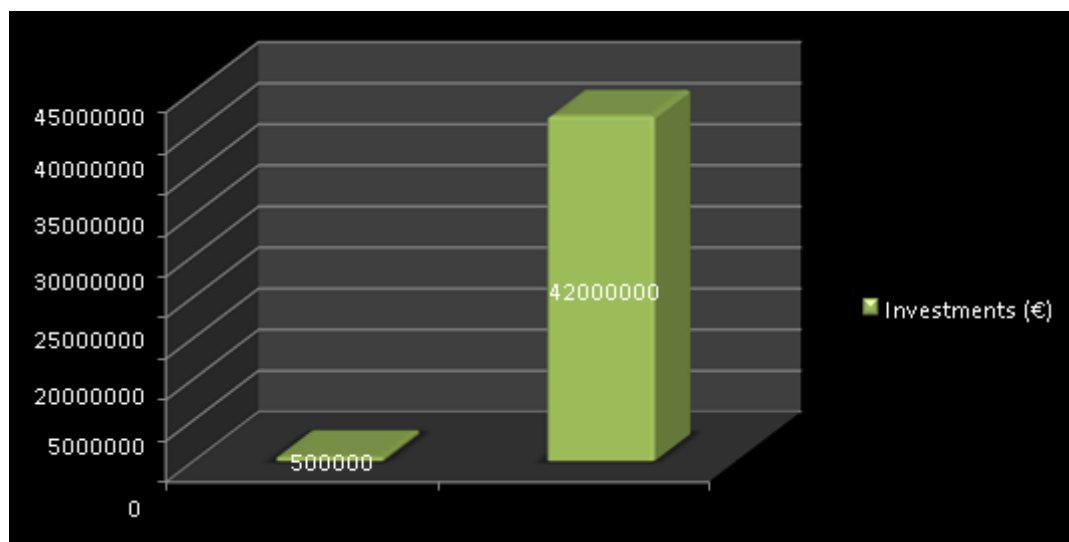
In recent years, there has been a rise in the number of entrepreneurial endeavours that are being undertaken in Greece. These new businesses may now be seen as a powerhouse of innovation, obtaining a growing volume of capital. Initially, this wave of start-ups emerged as a tool to counteract the economic slump; however, now, their emergence can be seen as a mechanism to counteract the economic downturn.

Recent research that was carried out by Endeavor Greece (2014), an international organization that works to encourage and support entrepreneurial endeavours, provides evidence that the rate of entrepreneurial activity in Greece is rapidly increasing. The results of this research provide evidence of the remarkable increase in the number of new businesses that have been launched in Greece. In the year 2010, there were a total of 16 new firms that were just getting their start. This number dramatically increased to 144 by the year 2013 (Figure 4.2). Notably, between the years of 2010 and 2013, fifty percent of these new businesses were mobile application-based, reflecting a pervasive trend seen worldwide.



*Figure 4-2: The number of Greek firms that are just getting started.*

In the same vein, the most recent study that was conducted by Endeavor Greece (2014) showed that there has also been a significant rise in the number of investments made in Greek start-up businesses. According to Endeavor, investments in new businesses reached a total of 42 billion Euros. This represents an increase of 80 times when compared to the amount of money invested in new businesses in 2010, which was just 500,000 Euros (Figure 4.3).



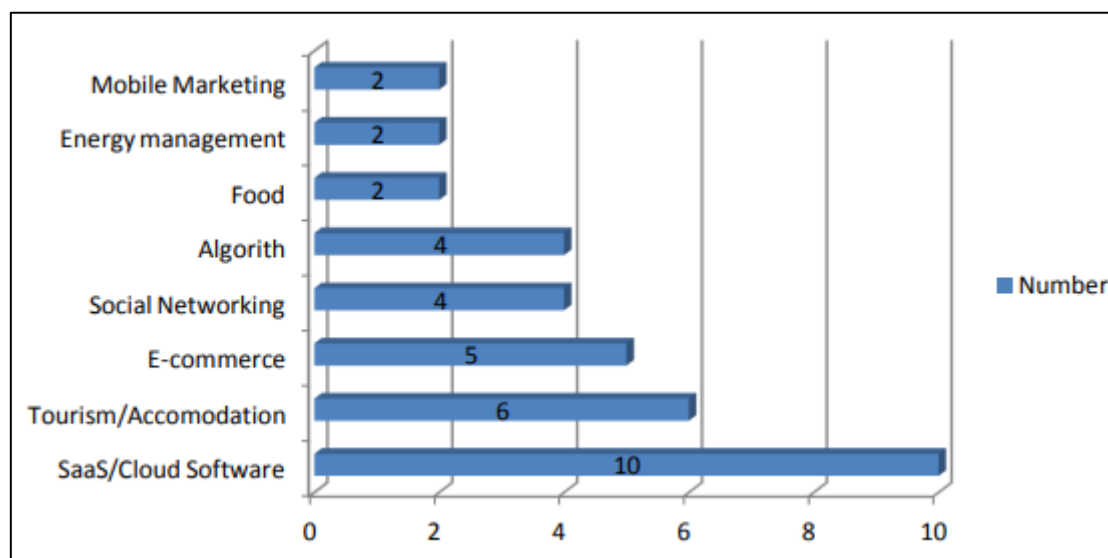
*Figure 4-3: 80x increase in the amount of money invested in Greek businesses.*

Digging a little further, we find that almost half of the investments made in 2013 went toward new businesses in the technology industry. These were soon followed by start-ups in the

financial services industry, with other industries like the media, food and agriculture, tourism, education, and entertainment all playing a large part in the process.

There is a correlation between the growth in the number of organizations and institutions that give assistance for entrepreneurial endeavours and the rise in the number of new businesses being started. This comprises programs such as incubators and co-working spaces, as well as a variety of events and contests with the goals of encouraging entrepreneurial activity and providing money for new venture ideas and initiatives. It is anticipated that there is one of these groups for every five new businesses that are just starting out (Endeavor Greece, 2014).

According to information provided by "EMEA Business Monitor," a site with a focus on entrepreneurship, Greek technology start-ups are active in a variety of economic areas. There are businesses operating in many different industries, including travel, e-commerce, social networking, energy management, mobile marketing, cloud-based SaaS or PaaS solutions, digital gaming, and digital archiving, to name just a few. In addition, a sizeable number of businesses are developing one-of-a-kind and highly specialized algorithms that serve as the cornerstone of their operations (Pogkas, 2013). The information shown in Figure 4.4 provides a categorized perspective of investments that were made in Greek technology start-ups in 2013, depending on the activity categories that the companies engaged in.



*Figure 4-4: Investments in newly established Greek technological companies*

It is essential to keep in mind that firms operating in industries other than SaaS or cloud software are just as likely to make use of cloud technology as those working in the software

industry. This claim is confirmed by the findings of an online survey that was carried out, which indicated that businesses operating in fields such as tourism and social networking also employ cloud computing. This argument is supported by the findings of the study. Some new businesses are capitalizing on the capabilities of the cloud to fuel innovation by distributing their new goods and services over the cloud and selling them on a subscription basis. Others make use of the cloud in order to reap the many potential advantages it provides, including the chance to save money, increase their IT flexibility, and focus on their main business operations.

#### **4.2.3 Quantitative Data Analysis**

An online poll was carried out with the purpose of determining the degree to which Greek start-up businesses have adopted cloud computing and gaining a deeper comprehension of the influence that it has had on both the start-ups themselves and Greek entrepreneurship in general. A number of Greek companies were asked to take part in an online survey and provide their feedback on the possible benefits and drawbacks of using cloud technology, as well as their general feelings on the impact that cloud computing is having on Greek start-ups and entrepreneurial endeavours. In spite of the fact that the survey's sample size may not be big enough to guarantee accurate findings and outcomes, it does provide some insightful information that may be of help.

#### **Utilization of the Cloud**

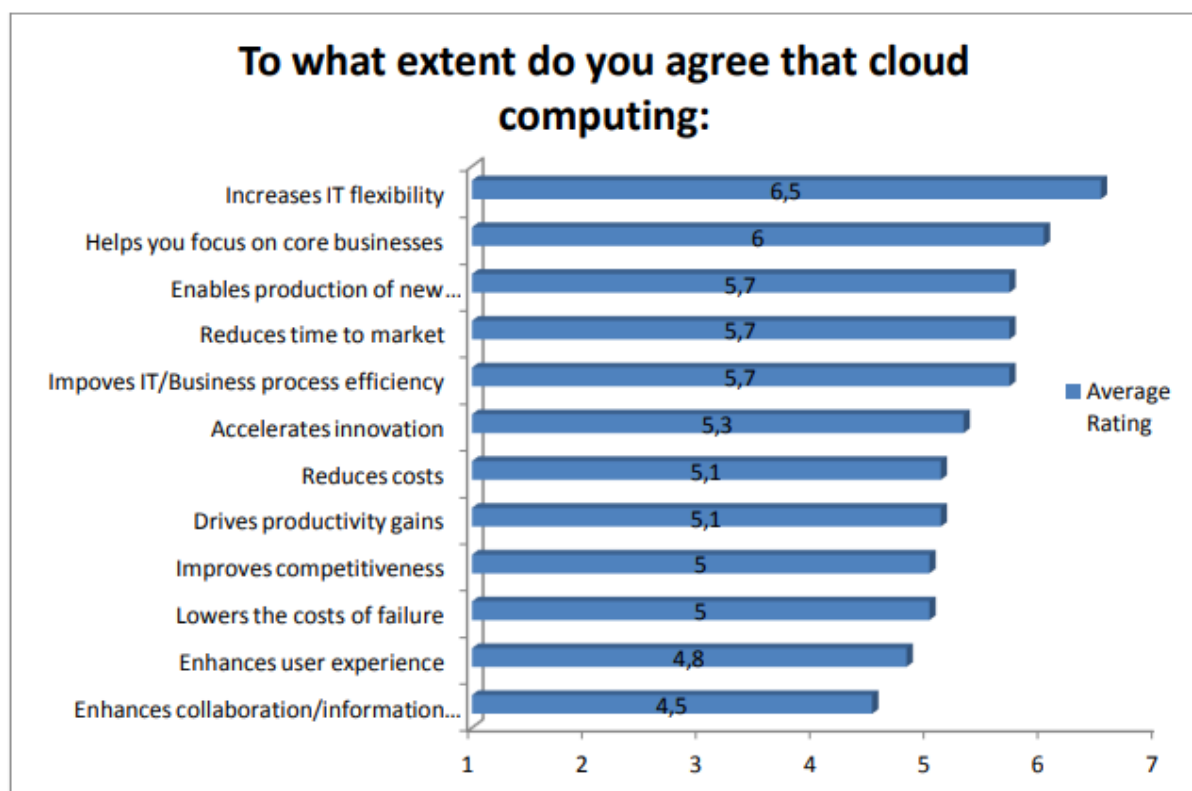
In terms of the adoption of cloud computing by Greek start-ups, around 79% of the respondents (19 out of 24) are now using the cloud, while the remaining 21% (5 out of 24) are contemplating the usage of cloud computing. According to this piece of evidence, Greek start-up firms have a solid understanding of cloud technology and are inclined to use them in their operations.

The findings of the poll indicate that Amazon, with its Amazon Web Services (AWS), is the most common supplier of cloud service, closely followed by Microsoft Azure as the second most prevalent provider. Cloud computing is used by the respondents for a variety of purposes, including storage, processing, hosting of databases, and server maintenance.



## Potential Benefits

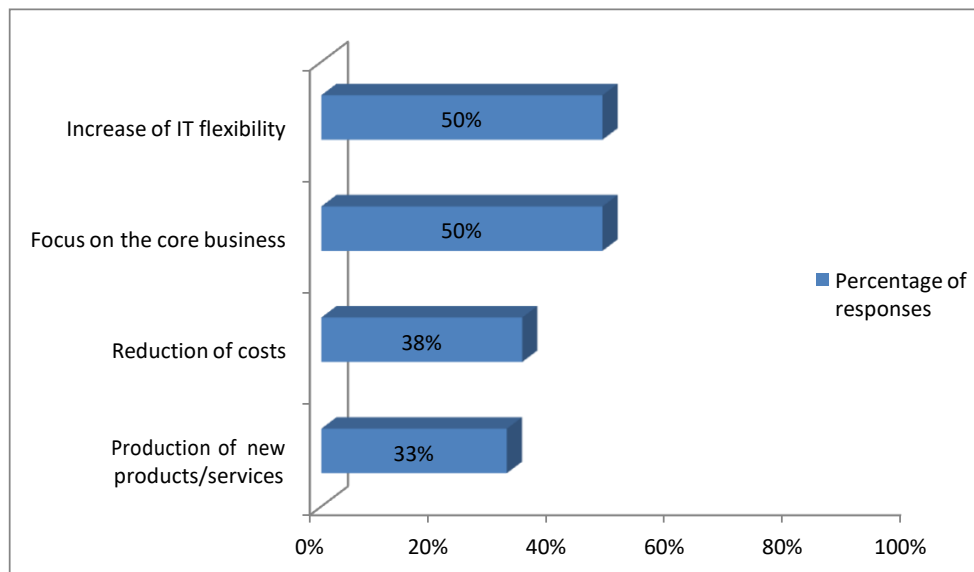
When it comes to the probable benefits, the respondents were asked to score how much they agreed with the possible advantages of cloud technologies that were detailed in the chapter before this one (Figure 4.5). According to the chart, a rating of 1 indicates "strongly disagree," while a rating of 7 indicates "strongly agree." According to the results of the study of the data that was gathered, cloud technologies have the potential to provide several advantages to Greek businesses. These include increasing the adaptability of information technology, making it possible to concentrate on core business activities rather than on information technology problems, lowering the cost of information technology and the amount of time it takes to bring new goods or services to market, fostering creativity, and improving the efficiency of the relationship between information technology and business. These are only some of the possible advantages that were given a high overall grade by the respondents.



*Figure 4-5: Greek start-ups may benefit greatly from using cloud computing.*

Figure 4.6 is an illustration of the top four advantages that cloud users find to be the most valuable. The things were given a list of possible advantages and instructed to choose two of them. According to the findings, some of the most important effects that cloud technologies

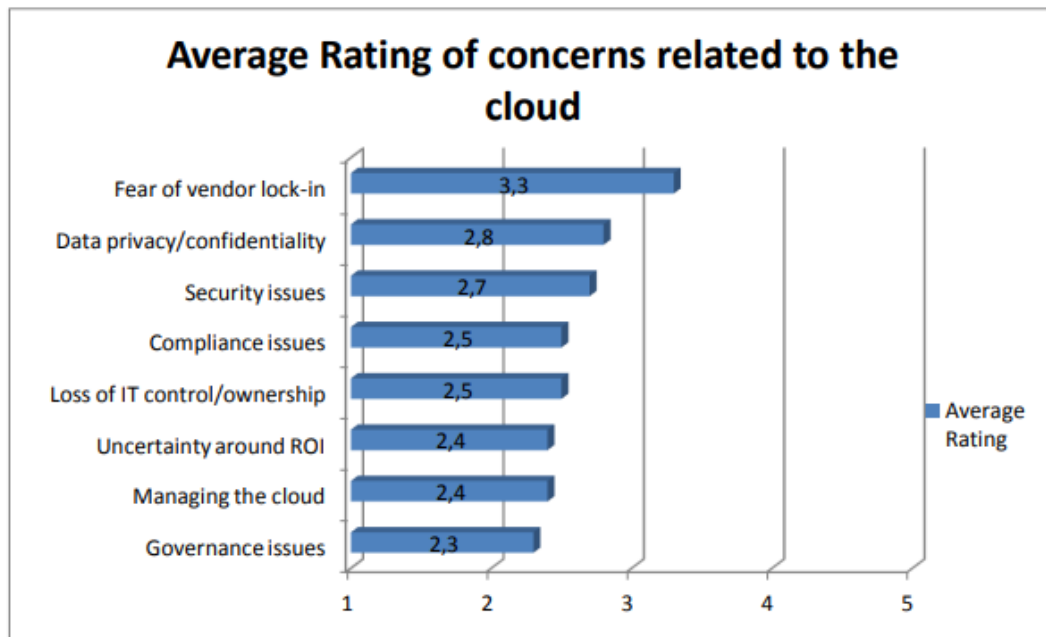
have include an increase in IT flexibility, a focus on core businesses, a decrease in expenses, and the generation of new goods and services.



*Figure 4-6: The most significant advantages provided by the cloud.*

### **Concerns pertaining to the use of the cloud**

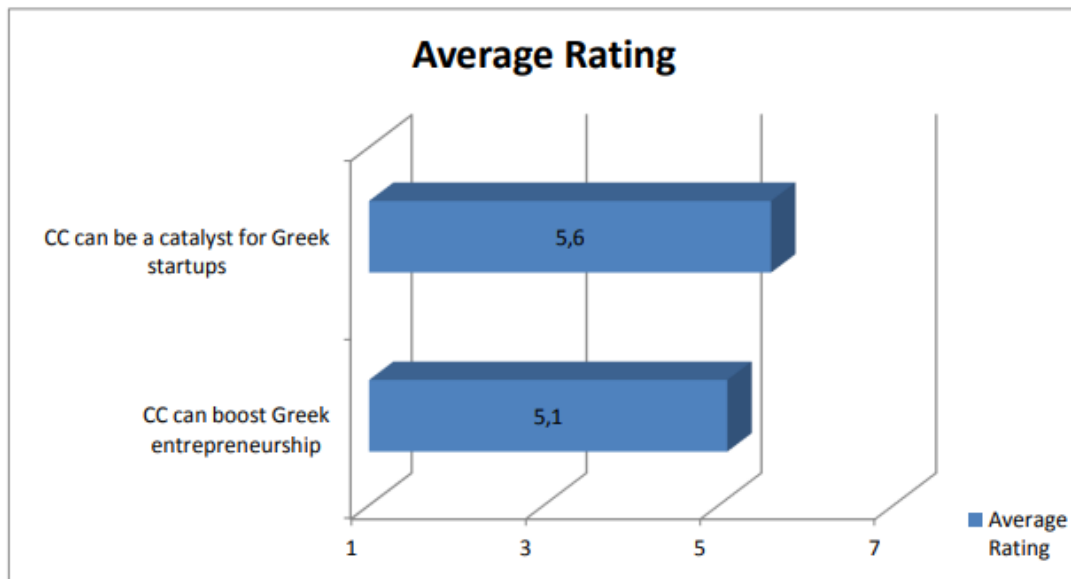
The respondents were asked to assess how significant several frequent hazards and problems posed by the cloud are. These ratings are relevant to the issues that are associated with cloud technology. The grade of 1 is equivalent to "not at," while the rating of 5 is equivalent to "extremely serious." The findings are shown in the following image (which is referred to as figure 4.7). Fear of being dependent on a single provider, concerns about the privacy and confidentiality of one's data, and problems with security are among the most common worries.



*Figure 4-7: Related Concerns*

### **Influence of the Cloud Computing (CC) in General**

Respondents were asked to indicate the degree to which they agreed or disagreed with general statements in order to glean insights on the more widespread influence that cloud computing has had on Greek entrepreneurship and start-up businesses. A rating of 1 equates to "strongly disagree," while a grade of 7 corresponds to "strongly agree" in Figure 4.8. Respondents indicated a degree of agreement, ranging from "somewhat agree" to "agree," with the premise that cloud technologies may act as a stimulus for Greek businesses. In general, respondents agreed that cloud computing had the potential to enhance Greek entrepreneurship.



*Figure 4-8: The impact of cloud computing on Greek start-up culture.*

## **CHAPTER 5**

### **DISCUSSIONS AND CONCLUSION**

#### **5.1 Discussion**

##### **5.1.1 Cloud computing on start-ups**

In Greece, there has been a discernible rise in the number of people engaging in activities related to entrepreneurship over the course of the previous three years, to summarize the findings of research. This is seen by the meteoric rise in the number of new businesses being launched. Concurrently, in 2013, Greek entrepreneurs enjoyed a spike in investment, reaching an astonishing eightyfold compared to the number of investments made in 2010. This was a significant increase from the number of investments made in 2010. The fact that ten of the thirty-five firms who were successful in securing investment in the previous year provide either Software as a Service (SaaS) or Platform as a Service (PaaS) via the use of the cloud is an important fact. The results of a quantitative study provide credence to the hypothesis that a sizeable proportion of new ventures are now using cloud computing solutions or will do so in the not-too-distant future. There is a clear understanding among business owners of the potential benefits as well as the challenges that are connected with using cloud computing. The concept of cloud computing has the potential to have a favourable impact for new business ventures and entrepreneurial endeavours in Greece, according to a widespread point of view.

When all of these considerations are taken into account, cloud computing appears as an innovative technology paradigm that has the potential to strengthen Greek entrepreneurial endeavours by lowering the expenses of ventures, increasing the value of their goods and services, and even encouraging the development of new products and services. There is substantial evidence to suggest that cloud computing has been a significant factor to the recent explosion of Greek entrepreneurship and the formation of new start-ups over the course of the last three years. The possible effect is broken down into the following points.

Cloud computing provides a variety of advantages, which might be useful to business people who are just starting out. To begin with the financial component, which is one of the most difficult aspects of running business in Greece, cloud technology may unquestionably result in cost savings. This is one of the most tough things. Because the cloud computing model is based

on the concept of "pay as you use," there is no need for any upfront costs to be incurred. According to Blank (2012), the definition of a start-up is "a temporary organization that is searching for a scalable, repeatable, and profitable business model." The need for scaling an organization's information technology resources arises simultaneously with the discovery by entrepreneurs of a business model that is scalable. Users of cloud technologies, on the other hand, do not need to be concerned about overprovisioning even in the event that there is a spike in the demand for computing resources. Cloud computing makes it possible to rapidly control scaling by adjusting the amount of storage space, server capacity, and network bandwidth required to meet the demands of individual users. This allows for access to economies of scale that were previously only available to businesses of a greater size. For the purpose of gaining a deeper comprehension of this matter, let's take the case of "Animoto," a young and nascent business that made the decision to make use of Amazon Cloud Services. Amazon's web services allowed Animoto to effectively manage the enormous strain that resulted from the rapid growth of its user base (Amazon, n.d.). Animoto was able to successfully attract 750,000 new members in only three days.

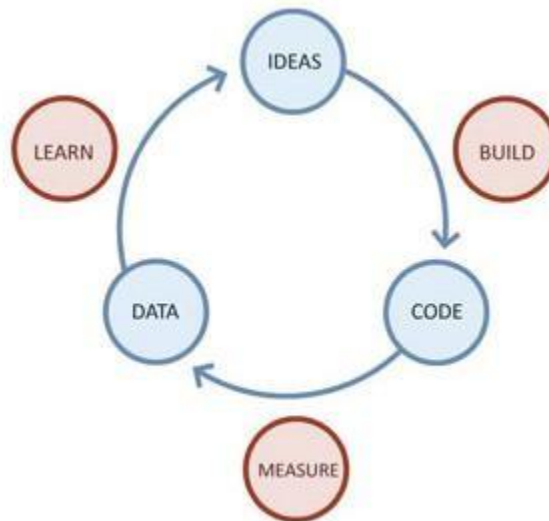
It is important to keep in mind that the benefits of cloud computing go much beyond simple savings in terms of cost. In point of fact, cloud computing offers a great deal more value than just reducing the costs associated with IT. In essence, the degree of adaptability that it provides in terms of infrastructure, services, and processes may be a significant driver of innovation. Cloud computing is generally seen as a method for reducing expenses; nevertheless, there is a far larger opportunity that is now available. We are moving into a new age of computing in which the flexibility of information technology will be essential to the agility of businesses. One quality that could be associated with an agile company is mobility. The cloud gives people the ability to work together and contribute to the objective of the firm regardless of where they are physically located.

Cloud computing considerably reduces the amount of time needed to bring a product to market, which enables a more attention to be placed on marketing and strategic planning rather than operations. This has a positive impact on productivity. The time it takes to get an idea for a product or service to market might be cut down by a significant amount. The cloud computing environment provides an excellent testing ground for fresh concepts that is both straightforward and economical. By lowering operating costs and simplifying the process of managing information technology resources, entrepreneurs may rapidly develop new services and

applications. As a consequence, new enterprises may focus on their core operations rather than on the construction and management of an information technology infrastructure. Entrepreneurs also have the ability to experiment with a large number of prototypes at the same time, allowing them to improve their products in a very short amount of time. As a result, cloud computing has the potential to encourage "seed and grow" activities by simplifying the process of rapidly developing prototypes. Because it enables people to test their company plans quickly and cheaply by offering rapid access to hardware resources and other services, flexible infrastructure and its service-centric paradigm might be ideal for start-ups. This is because flexible infrastructure allows individuals to test their business ideas.

At a start-up event held in Stockholm in 2012, Niklas Zennstrom and Andreas Ehn confirmed the notion that cloud technologies provide an efficient and adaptable technique for testing new ideas. They came to the conclusion that "Today's start-ups clearly benefit from using cloud computing, initiating their journey quickly at a low cost." When compared to our original start, which needed large expenditures in information technology, we lost a significant amount of time in the market. The cloud frees users to concentrate on the work at hand rather than the means by which it will be completed. It enables you to focus on the most important aspects of the company while avoiding the constraints imposed by technology. Any and all technical problems, such as those relating to installations, maintenance, or other aspects of information technology, are managed by the cloud provider.

The lean start-up process may benefit significantly from the use of cloud computing. The build-measure-learn cycle is one of the five guiding concepts of the lean start-up methodology. In this cycle, you "convert ideas into products, gauge customer response, and then deduce whether to adjust or persist" in your business. The objective is to shorten the time period of this loop while simultaneously increasing the percentage of successful innovations. Companies that make use of cloud computing have the ability to accelerate this loop's iteration, hasten the cycle of experimentation, rapidly construct a product, monitor and learn from the interactions of customers with the product, and so on. Because of the flexibility that clouds technologies provide, company owners now have the capacity to modify their operational strategies in response to changes in the needs and preferences of their customer base.



*Figure 5-1: Construction, evaluation, and improvement cycle*

When seen from a more holistic viewpoint, cloud computing opens doors to new business opportunities and markets, giving companies the capacity to compete on a global scale without the need to make costly infrastructure expenditures. Since cloud-based services may be immediately accessible by clients located anywhere in the world who have access to the internet, barriers based on geography or language can be overcome. One way of looking at it is that cloud computing paves the way for a whole new set of options for entrepreneurs.

### **5.1.2 The Impact of Cloud Computing on Funding**

When starting a business, a substantial expenditure of cash is often required, and finding investors for a start-up continues to be one of the most important hurdles that entrepreneurs face. This is especially true when attempting to engage venture capitalists in the early stages of a start-up's development. The impact that cloud computing may have on a young company's ability to get financial backing is the topic of discussion in this separate part. As an entrepreneur, you are well aware of the importance of this endeavour as well as the challenges it might provide.

When trying to obtain finance, the negotiation of the agreement is a very important step. Investors look for returns that may compensate them for the risks they take, while entrepreneurs try to get capital for their businesses. When it comes to the process of funding new businesses, various informational challenges might occur due to the fact that the information that is available to the entrepreneur and the financier is kept in unequal amounts. One of these concerns



is the fact that investors are likely to hold greater information about the future economic worth, in comparison to entrepreneurs, who could have better knowledge about the technical merit of the venture. Additionally, investors may not have a clear knowledge of the competencies and commitment level of the entrepreneur they are investing in. As a consequence of this, people look forward to seeing concrete proof that might reassure them about the entrepreneur's skills and help them cope with the inherent risk that comes with starting a new business. Instead of investing money all at once, staged financing involves investment that is staggered and related to performance criteria (milestones). This method is often used to overcome this problem.

The use of cloud computing has unquestionably altered several facets of the process by which technology-based businesses are founded and constructed, as well as the method through which they get funding. Cloud computing gives start-up companies the ability to rapidly construct an infrastructure and then experiment with their new ideas while running on that infrastructure. It is now simpler and cheaper than ever before to get a start-up up and running, particularly in terms of the technological aspects of the process. Less financial resources are needed for entrepreneurs to create prototypes, test them, launch a first product, secure their first consumers, and gain useful feedback on their products. This suggests that early user validation may be done sooner, and that entrepreneurs can show to investors how their ideas can be implemented in the real world in a manner that is quicker, simpler, and less expensive. Therefore, there is a decreased early-stage risk, and some of the technical and product concerns that may show in the beginning may be partially managed. This is good news for investors because it means that early-stage risk can be minimized.

Both venture investors and business owners would rather put their attention on the company's business model rather than the technological infrastructure, since the latter's worth would be severely diminished in the event of a failure. When compared to conventional technological solutions, cloud technologies provide start-ups a technique that is both quick and inexpensive to launch their ideas. These technologies may be used by start-ups. In the past, prototyping a new system that made use of conventional technological solutions could have required the purchase, installation, and configuration of new hardware and software; however, there is now the possibility to forego this step and depend on solutions that are hosted in the cloud.

In a study titled "Exploring the Future of Cloud Computing: Riding the next wave of technology-driven transformation," which was published by the World Economic Forum, a

venture investor was quoted as saying, "We no longer fund companies based on PowerPoint proposals." We provide them money depending on whether or not their cloud-based solutions are already online and producing results. According to the same research, for the study expressed reluctance to invest in any information technology start-up firm that did not have plans for using cloud technologies.

since of this, we can conclude that the usage of cloud computing is interesting to venture capitalists and angel investors since it enables entrepreneurs to submit a business plan with minimal capital expenditures. This is made possible by the fact that cloud services provide more cost-effective solutions when compared to the prior technological alternatives that were available. As a result, using cloud computing services might potentially cause a change in the risk profile of a fledgling business.

## **5.2 Conclusions**

The theoretical features of this study, the assessment of the existing situation of the start-up ecosystem in Greece, as well as the analysis of the data obtained from the online survey, allow for the formation of a number of findings and suggestions.

To begin, there is mounting evidence to suggest that cloud computing might have a big impact on Greek new businesses and entrepreneurial endeavours. It's possible that the cloud may play a significant role in Greece's future. In light of the present state of the Greek economy, new businesses have begun adopting and are expected to continue adopting this cutting-edge and financially advantageous strategy. Due to the fact that many companies are actively looking for ways to lower their costs, the time is now more favourable than ever before to implement cloud computing technology. Cloud computing may help organizations save money while simultaneously enhancing their IT flexibility, assisting them in concentrating their efforts on their core operations, speeding up the innovation process, and making it easier to create new goods and services without lowering their overall quality or value. Given the good circumstances in the Greek ICT ecosystem, which are highlighted by the considerable spike in the number of start-up businesses and the already sizable proportion of SMEs, the environment looks to be ready for the adoption of cloud technologies. This is the case because of the favourable conditions in the Greek ICT ecosystem.

Because everything that is required to start may be made accessible as online services through the cloud, and because these services can frequently be obtained for free in the beginning, the cloud gives Greek businesspeople and innovators the opportunity to create new companies without having to make a significant investment up front. The use of cloud computing considerably reduces the risks often connected with starting a business, which not only encourages a large number of people to launch new companies but also brings in prospective investors who are prepared to fund them.

According to the findings of the research, there are several indications that the implementation of cloud computing has led to a discernible increase in the number of new start-up businesses as well as a significant rise in the amount of capital. Cloud computing has the potential to unleash a plethora of new business prospects and offer up fresh paths for the growth of existing companies in the nation. It has the potential to lower entry barriers in some areas while simultaneously improving the broader start-up environment.

However, just like any other new technical advancement, using cloud computing comes with a set of problems and possible hazards that need to be handled and managed before it can be considered fully viable. It is possible for the challenges associated with adopting cloud technology to differ from one location (Europe, Asia, etc.) and one category of users (governments, corporations, etc.) to another. Data security, privacy concerns, challenges with compliance, and the fear of vendor lock-in are among the most important dangers.

In order for stakeholders to really appreciate the significance of cloud computing as well as the possible advantages it can offer, they need to have a crystal-clear knowledge of what cloud computing actually is as well as the technology that underpins it. According to the findings of the study titled "The Business Impact of the Cloud," people who are extremely acquainted with the word have a far higher likelihood of believing that cloud computing may bring these advantages to their company. Those who are unable to keep up with the latest advances in technology run the risk of suffering severe repercussions.

It is impossible to overestimate the enormous potential of cloud computing to have an effect on entrepreneurial activity and the launch of new businesses in Greece. It is vital to identify and suggest viable steps for the government, the information technology sector, people, and cloud providers in order to expedite the adoption of cloud technologies and fully exploit its

potential advantages. The government, the information technology sector, consumers, cloud providers, and individual users all need to take a number of steps, including the following:

- There is a need for education among stakeholders on the benefits of cloud computing, which go beyond the financial gains that were outlined earlier in this paragraph. Those stakeholders that choose not to investigate or implement this notion run the danger of falling behind.
- Stakeholders need to be made aware of the possible dangers and difficulties related with cloud computing. A consumer's basic apprehensions surrounding the cloud are centered on protecting their data and maintaining their privacy.
- The government and the IT sector should collaborate to develop standards and laws that will promote and simplify the use and acceptance of cloud technologies, as well as reduce the costs of switching between different cloud providers. This will help reduce the danger of being locked into a contract with a single vendor.
- The government of Greece need to assist Greek business owners in gaining an awareness of this technology by disseminating the findings of research projects, surveys, and other cloud-related outcomes created by knowledgeable organizations located all over the world.
- The way that Greek entrepreneurs think about failure has to change since, in the Greek culture, failure has a tendency to stigmatize the entrepreneur. The possibility of one's business endeavour being unsuccessful is a substantial impediment that might reduce the amount of entrepreneurial effort. Computing in the cloud provides a mechanism that is both rapid and inexpensive to try out new concepts and learn from them, which in turn lowers the overall risk profile of the company.

In light of what has been shown in this article, it is safe to say that the concept of computing in the cloud has the potential to provide business owners with a number of advantages. However, just using this technology does not guarantee success, and the trip does not come to a conclusion when new technologies are adopted. Entrepreneurs need to see emerging technology as tools, welcome innovation and new ideas, be willing to experiment and fail while inching closer to achieving their goals.

## **CHAPTER 6**

### **BUSINESS IMPACT REPORT**

#### **6.1 Executive Summary**

Businesses in a wide variety of sectors are seeing rapid change as we go further into the digital era. This change is being driven, in large part, by advances in different forms of technology. One example of such a step forward in technology is the deliberate use of cloud computing, which has reshaped the operations and growth trajectories of enterprises in a wide variety of industries.

Cloud technology is a vital tool for modern enterprises because of its scalability, cost-effectiveness, and operational flexibility. Companies of all sizes, from SMBs to major conglomerates, are capitalizing on the opportunity offered by the cloud to transform their operations, enhance the delivery of their services, and ultimately increase their bottom line. This change to cloud-based operations has ramifications that go well beyond the simple adoption of new technology; it impacts every aspect of corporate strategy as well as the operations of the firm.

The shift toward cloud-centric operations is becoming not only a strategic advantage; it is also an absolute must for continued business. It not only affects how companies handle data and apps but also strategic choices, risk management, financial planning, and the growth of their personnel. It has an effect on the very culture of businesses, making it necessary to reevaluate the old business models and methods that have been used in the past.

The purpose of this study is to investigate the significant influence that adopting a cloud strategy may have across a variety of industries and to emphasize the role that it plays in determining the future of business sectors. In this session, we will look into how the use of cloud computing may help to the development of leadership skills, organizational transformation, risk management, and financial strategy. In order to accomplish this goal, in-depth insights into the revolutionary potential of cloud technology in today's fast-paced corporate environment will need to be provided.

## 6.2 Leading & Developing People

The adoption of cloud computing methods has a profound impact on the operations of a corporation and calls for a modification to the way leadership is practiced as well as the training of employees. Because of the collaborative nature of cloud technology and the ease with which it can be used remotely, leaders need to be able to successfully traverse a new terrain in which the traditional dynamics of cooperation and task management may not be applicable.

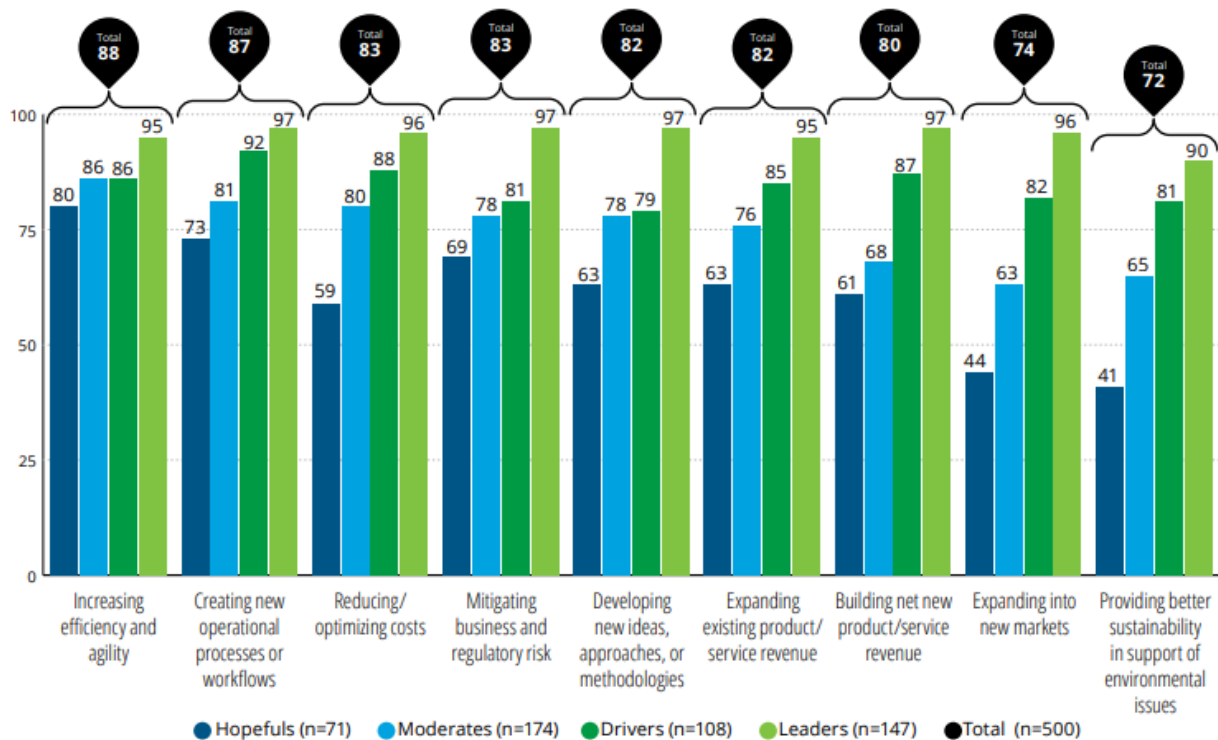
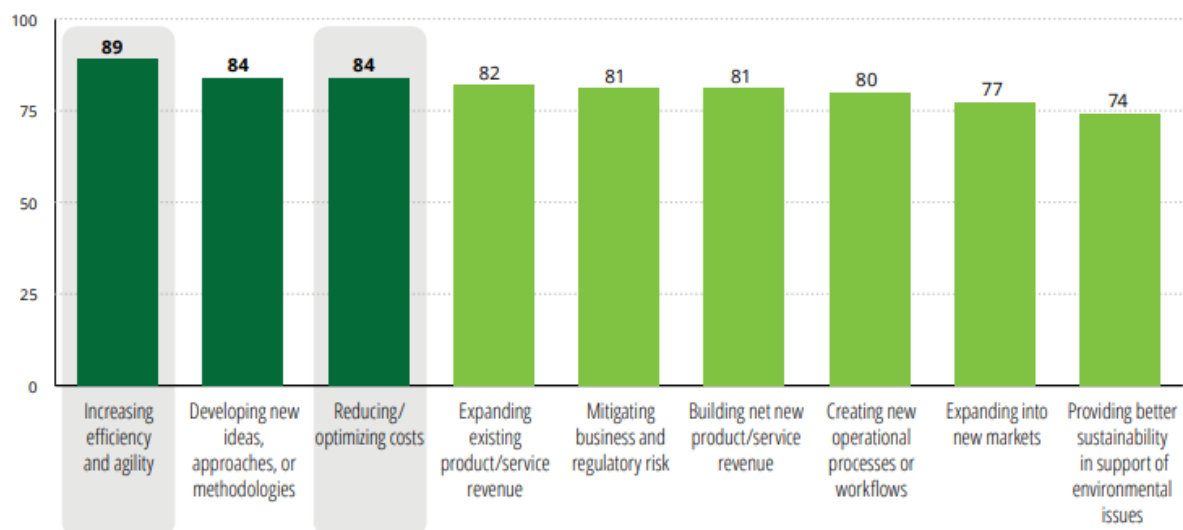


Figure 6-1: Positive effects resulting from investments in the cloud (deloitte.com)

According to the study, the fundamental strategic target for the majority of analysis is to increase efficiency while limiting expenses. This is a goal that has been successfully attained by a considerable amount of even the less advanced categories, including 80 percent of Hopefuls and 86 percent of Moderates. The invention of new procedures or workflows was the second most frequent positive consequence, with a notable increase in success rates matching to the degree of creativity (73% for Hopefuls, 81% for Moderates, 92% for Drivers, and 97% for Leaders). However, what really sets Leaders apart from others is their ability to create success in a variety of domains, not limited to only efficiency and operations. They excel in particular in the generation of new product or service revenues as well as in the creation of novel ideas, methods, or techniques.

Leadership duties in an office setting that makes use of cloud computing go beyond the traditional allocation of tasks and monitoring of employees' performances. The leaders of an organization are tasked with developing a company culture that makes the most of the advantages offered by cloud computing. This entails cultivating a culture of openness, creativity, and adaptation, in which workers are incentivized to take use of the cloud's potential in increasing their productivity and efficiency.

In preparation for the widespread use of cloud computing, employee training and development programs should concentrate on providing workers with the knowledge and abilities required to traverse cloud platforms efficiently. This includes both technical training and training in change management in order to assist workers in adjusting to the changing dynamics of the workplace.



*Figure 6-2: Strategic priorities (deloitte.com)*

According to the findings of the study, there is a discernible gap between the strategic objectives of businesses and their capabilities to encourage innovation in these essential domains. It has come to light that the three basic business strategy goals, as specified by the respondents, are boosting efficiency and agility (89%), coming up with new ideas, methods, or techniques (84%), and decreasing or optimizing expenses (84%). However, it seems that these firms have a need to improve their capability of driving innovation successfully in these important areas. This might be a need for them to meet.

When it comes to ensuring the effective adoption and exploitation of cloud technology, leaders play a very important role. This includes ensuring that staff are prepared with the appropriate knowledge and abilities, managing employees' resistance to change, and allowing seamless transitions between stages of the process. The most important thing is to cultivate an atmosphere of encouragement among workers, so that they can appreciate the benefits of the change and be inspired to adjust to it.

In addition, those in leadership roles need to gain a deep understanding of cloud computing and the ways in which it affects corporate operations. This comprehension serves as the foundation for the decision-making processes that are associated with the implementation and use of cloud technology. It enables leaders to see possibilities and problems posed by the technology and to formulate plans for making the most of the technology's potential applications.

The transition to cloud-based operations, in its core, gives a chance for leaders to cultivate a culture that values innovation, cooperation, and ongoing education. Leaders should guarantee that their businesses are well-positioned to capitalize on the advantages of cloud technology by developing an atmosphere that is favorable to change and encouraging the development of critical skills.

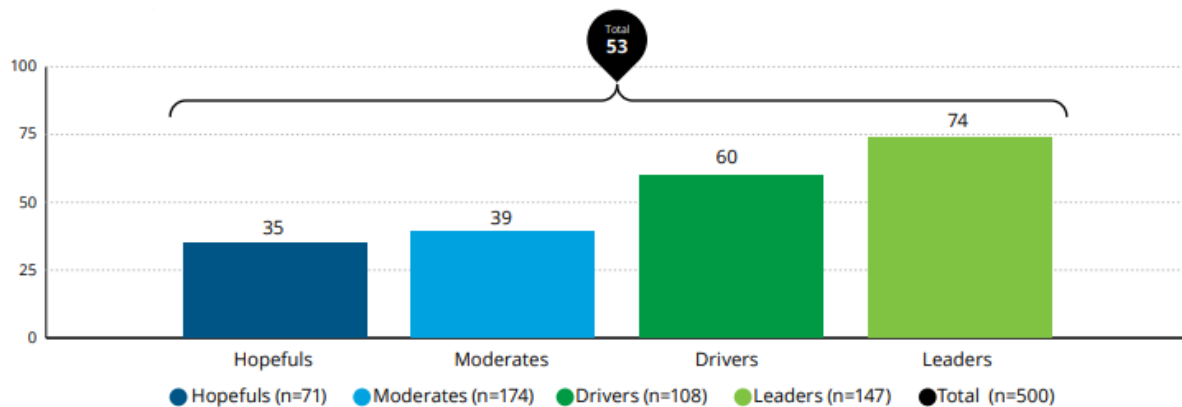
### **6.3 Organizational Change**

Any company that adopts a cloud strategy will see major organizational changes, and these shifts will be experienced across a variety of industries. As a result of the several facets, including operations, structure, culture, and strategy, that will be impacted by this shift, an all-encompassing plan for managing change will be required.

The move to cloud computing may improve an organization's operational efficiency by streamlining operations, increasing scalability, and enabling more flexibility. It suggests a transition away from the conventional methods of storing, retrieving, and processing data and toward a system that is more fluid and dynamic. The fact that departments are no longer constrained by the physical restrictions of their own servers has a significant effect on the manner in which activities are carried out and projects are handled.



When it comes to the organization's structure, the use of cloud technology may result in the need for a reappraisal of existing positions. There is a possibility that certain roles may be made unnecessary while others will be added so that the cloud infrastructure can be managed and maintained. Because of this, we need to do a comprehensive analysis of our staff and consider the possibility of reorganizing in order to meet the new technological standards.



*Figure 6-3: Industry faith in clouds as a transformative force (deloitte.com)*

A shift in mentality and approach is required across cultures in order to accommodate the use of cloud computing. In contrast to the typical work settings that are compartmentalized into separate departments, this new paradigm encourages innovative thinking, adaptability, and a collaborative approach. As a consequence of this, businesses need to devise a plan for managing change that can overcome opposition from workers, address their worries, and persuade them to accept the change.

The cloud computing concept has a strategic influence on a company's business strategy since it creates new options for development and innovation. It is possible to drive strategic choices, product development, and market strategies by having the capacity to harness big data, machine learning, and advanced analytics.

Therefore, the adoption of a comprehensive strategy is necessary for the successful transformation of an organization toward the implementation of a cloud strategy. This requires educating the workforce to take on new tasks, implementing rules to govern the usage of cloud services, and developing a culture that is open to change and innovation. When this is done,

companies in a wide variety of sectors become better positioned to capitalize on the transformational potential of cloud technology.

## 6.4 Risk and Decision Making

Implementing a plan that relies on the cloud comes with a number of advantages, but it also introduces new dangers. Concerns about data breaches and privacy, as well as regulatory compliance challenges, are among them. Those in charge of making decisions are obligated to carry out exhaustive risk assessments and to construct effective data security and governance structures.

Important decisions to make include selecting the appropriate cloud service provider, deciding on the kind of cloud service (public, private, or hybrid), and determining which business tasks should be moved to the cloud. These kinds of judgments have to be founded on a rigorous examination of the organization's particular requirements, resources, and level of tolerance for risk.

## 6.5 Finance

The implementation of financial strategy is strongly influenced by cloud computing. The upfront expenditures of information technology infrastructure are replaced with ongoing expenses that are more predictable, offering businesses with more financial flexibility.

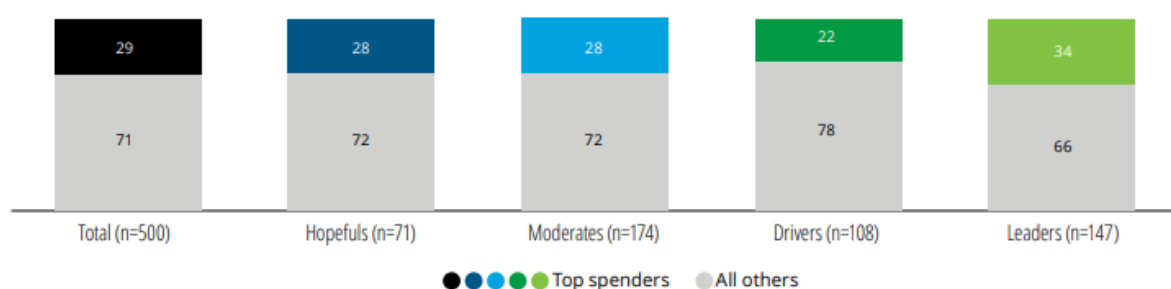


Figure 6-4: Cloud investment normalized for organization revenue (deloitte.com)

Only 9% of companies spent more than one hundred million dollars on cloud computing solutions in the preceding year, while twenty one percent of companies spent between twenty and one hundred million dollars on these services. The bulk of companies, 67%, made investments that were less than \$20 million. When considering the future, an overwhelming

majority of the firms that were polled (87%) anticipate increasing their expenditure on cloud computing by at least six percent during the next one to two years, and several of these organizations anticipate increasing their investment by more than twenty percent. On the other hand, 12% of people say they want to keep their investment levels the same, while just 1% say they anticipate cutting down on their investment levels. The so-called "Hopefuls," who are trailing behind in cloud adoption, are the most eager to increase their cloud investments, with 93% planning an increase of at least six percent over the next one to two years. This proportion exceeds the proportion in the Leader (89%), Driver (83%), and Moderates (85%) segments combined. This is an intriguing point that bears further examination. This propensity might be explained by the fact that they are aware of the gap between them and the competition and feel the pressure to close it.

Through the usage of cloud services, organizations are able to pay only for the resources that they actually use, resulting in a more effective allocation of financial resources. However, moving to the cloud may result in extra charges, such as fees associated with migration and training, as well as possible downtime incurred during the move itself. Before moving forward with the implementation of a cloud strategy, a comprehensive cost-benefit analysis has to be carried out first.

## **6.6 Reflection on Learning as a Senior Leader**

Implementing a plan that relies on the cloud presents senior leaders with a variety of educational possibilities. This demonstrates the need of open lines of communication and the requirement of having a common goal when it comes to successfully managing change. It highlights the crucial role that leadership plays in the process of creating a culture that welcomes innovation and prioritizes lifelong learning.

Leaders also get an understanding of the significance of striking a balance between innovation and risk. Cloud computing introduces novel dangers but also has the ability to bring forth significant innovation. The challenge is in effectively managing and mitigating these risks without impeding the development of new ideas.

In addition to this, establishing a cloud approach highlights the need of having flexible financial management. Leaders acquire the ability to transition away from capital-intensive IT

investments and toward operational cost models that are more flexible, which enables more adaptable resource allocation. (Appendix A).

The adoption of a cloud strategy has far-reaching effects across all sectors, and it has the potential to completely transform the way in which organizations function. As the cloud computing technology continues to advance, its effect on people, organizational structures, risk management, financial practices, and leadership styles will also continue to grow. In the current world of digital technology, embracing the cloud is not a choice but rather a strategic need. Long-term development and increased competitiveness may be driven by the cloud provided firms take the time to fully comprehend and effectively manage its myriad of consequences.

## REFERENCES

- Alashoor, T., Zhang, B., & Wills, C. (2020). A systematic literature review of cloud computing adoption and its barriers. *International Journal of Information Management*, 52, 101977.
- Buyya, R., Yeo, C. S., Venugopal, S., Broberg, J., & Brandic, I. (2009). Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility. *Future Generation Computer Systems*, 25(6), 599–616.
- Carlin, S., & Curran, K. (2012). Cloud Computing Technologies. *International Journal of Cloud Computing and Services Science*, 1(2), 59–65.
- Cattaneo, G., Kolding, M., Bradshaw, D., & Folco, G. (2012). Quantitative Estimates of the Demand for Cloud Computing in Europe and the Likely Barriers to Take-up.
- Chan, W., Leung, E., & Pili, H. (2012). Enterprise Risk Management for Cloud Computing.
- Chou, D. C., Tripuramallu, H. B., & Chou, A. Y. (2018). BI & A and ERP integration in cloud-based systems: An implementation guide using service-oriented architecture. Springer.
- Cruz, X. (2013). Cloud Computing Around the World: Greece. Available at: <http://cloudtimes.org/2013/06/05/cloud-computing-around-the-world-greece/> (Accessed: 15 March 2014).
- Danchev, S., Tsakanikas, A., & Ventouris, N. (2011). Cloud Computing: A Driver for Greek Economy Competitiveness, (November).
- Endeavor Greece. (2014). Greek Start-up Scene At A Glance. Available at: <http://www.endeavor.org.gr/en/articles/greek-start-up-scene-glance> (Accessed: 29 March 2014).
- Fingar, P. (2009). Cloud Computing: It's about Management Innovation, 1–5.

Fox, A., Griffith, R., Joseph, A., Katz, R., Konwinski, A., Lee, G., ... & Zaharia, M. (2017). Above the clouds: A Berkeley view of cloud computing. *Communications of the ACM*, 53(4), 50-58.

Furht, B., & Escalante, A. (Eds.). (2016). *Handbook of cloud computing*. Springer Science & Business Media.

Gill, A. Q., Singh, M., & Buyya, R. (2016). A taxonomy and future directions for sustainable cloud computing: 360-degree view. *ACM Computing Surveys (CSUR)*, 49(4), 1-33.

Gong, C., Liu, J., Zhang, Q., Chen, H., & Gong, Z. (2010). The Characteristics of Cloud Computing, 275 – 279.

Gordon, J., & Hayashi, C. (2010). *Exploring the Future of Cloud Computing: Riding the Next Wave of Technology-Driven Transformation*.

Gordon, M., & Marchesini, K. (2010). Examples of Cloud Computing Services. Available at: <http://www.unc.edu/courses/2010spring/law/357c/001/cloudcomputing/examples.html> (Accessed: 15 March 2014).

Holgersson, H. (2012). Niklas Zennström och Andreas Ehn snackar entreprenörskap. Available at: <http://entreprenor24.se/videoklipp/5711-niklas-zennstrom-och-andreas-ehn-snackar-entreprenorskap/> (Accessed: 24 April 2014).

Joton, S. (2009). Diagram showing three main types of cloud computing (public/external, hybrid, private/internal). Available at: [http://en.wikipedia.org/wiki/Cloud\\_computing](http://en.wikipedia.org/wiki/Cloud_computing) (Accessed: 10 March 2014).

Kleinrock, L. (2005). *A Vision for the Internet*, 2(1), 4–5.

Krikos, A. (2010). *Disruptive Technology Business Models in Cloud Computing*. Massachusetts Institute of Technology.

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

Moritz, R., Garland, P., Pearl, M., & Gittings, R. (2010). 10 Minutes on the Cloud.

Padnos, C. (2012). How Cloud Computing Changes Start-up Investing. Available at: <http://sandhill.com/article/how-cloud-computing-changes-start-up-investing/> (Accessed: 25 April 2014).

Pantano, E., Pizzi, G., Scarpi, D., & Dennis, C. (2017). Competing through omnichannel retailing: The effects of store assortment, product availability, and retail service quality. *Journal of Service Management*.

Pieterse, M. N. B. (2009). Benefits of IT (Information Technology) in Modern Day Business. Available at: <http://www.modernghana.com/news2/242392/1/benefits-of-it-information-technology-in-modern-da.html> (Accessed: 19 March 2014).

Pogkas, D. (2013). No Title. Available at: <http://www.emea.gr/greek-start-ups-funding-2013> (Accessed: 5 April 2014).

Radack, S. (2012). Cloud Computing: A review of features, benefits, and risks, and recommendations for secure, efficient implementations, (June).

Tao, F., Cheng, J., Qi, Q., Zhang, M., Zhang, H., & Sui, F. (2018). Digital twin-driven product design, manufacturing and service with big data. *The International Journal of Advanced Manufacturing Technology*, 94(9-12), 3563-3576.

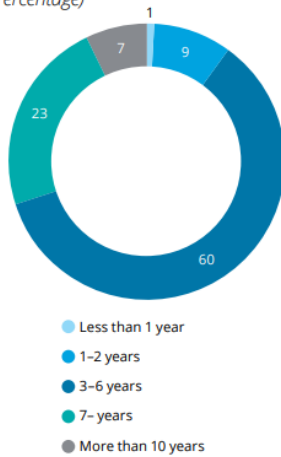
Yates, A., Camara, G., & Kehoe, A. (2019). Cloud Computing in Health and Life Sciences Research. In *Cloud Computing in Health and Life Sciences Research* (pp. 1-16). IGI Global.

Yousefpour, A., Fung, C., Nguyen, T., Kadiyala, K., Jalali, F., Niakanlahiji, A., ... & Jue, J. P. (2019). All one needs to know about fog computing and related edge computing paradigms: A complete survey. *Journal of Systems Architecture*, 98, 289-330.

## APPENDIX A

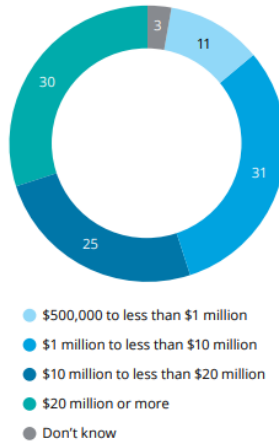
### Cloud adoption

**S8.1: Years of cloud adoption**  
(Percentage)



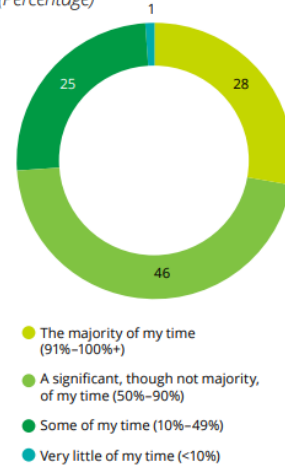
### Investment in cloud solutions

**S6.3: Level of investment in cloud solutions**  
(Percentage)



### Level of innovation focus

**S7: Level of innovation focus**  
(Percentage)



### Workloads and application in cloud

**S8.2: Percentage of workloads/application in the cloud**  
(Percentage)

	Has migrated already/ has developed cloud native	Will migrate in the next 1-2 years	Will develop cloud native in the next 1-2 years
None	0%	2%	6%
1-20%	21%	18%	23%
21-40%	36%	38%	26%
41-60%	21%	29%	22%
61-80%	11%	11%	14%
Above 80%	11%	3%	9%

### Workloads and application in cloud vs. traditional on-premise solutions

**S8.3: Percentage of workloads/applications in the cloud vs. traditional solutions**  
(Percentage)

