Dissertation

Dublin Business School

IMPACT OF AMAZON CLOUD SERVICE IN RETAIL INDUSTRY OF IRELAND

A STUDY ON

Dissertation

Project Title

Impact of Amazon Cloud Service in Retail Industry of Ireland

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Word count = 15212

MASTER OF BUSINESS ADMINISTRATION

IN

DEPARTMENT OF CLOUD COMPUTING

Declaration

I, Sandun Eranda Gamage, declare that this study is my original work and that it has never been presented to any institution or university for the award of master degree (cloud Computing). In addition, I have referenced correctly all literature and sources used in this work and this work is fully compliant with the Dublin Business School's academic honesty policy.

Date: 25th August 2020

Name: Sandun Eranda Gamage

Module code: B9RS102

Acknowledgement

Foremost, I would like to express my sincere gratitude to my advisor Prof. Tom wall for the continuous support of my MBA study and theses, also, for his knowledge and his guidance helped me in all the time writing of this thesis. I could not have imagined having a better advisor and mentor for my MBA theses

I was also surrounded by special people who gave me listening ears throughout this study. Thank you to everyone that made this journey a success, and to my family that helped me start this journey.

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Abstract

The cloud computing services have the proficiencies for enhancing the proficiencies of the retail business process in Ireland. The purpose of the study is to analyze the influence of Amazon cloud service for developing the share of benefit in Irish retail industry. Additionally, the study explores and analyses the importance of Amazon cloud computing services for developing the purchasing intention of consumers. Amazon web services are considered as one of the important cloud platforms that helps a company for attracting the potential consumers. In terms of the study, both quantitative and qualitative data collection methods will be selected for identifying the essential information related with the cloud computing service in Irish retail industry. Findings section of the study defines and analyses about the problems related with the application of cloud computing services in retail organisation. Further, it is noted that the involvement of skilled employees can develop the potentiality of cloud computing service and retail business

Abbreviation	*Full form*
AWS	Amazon Web Service
SAAS	Software as A Service
PAAS	Platform as A Service
IAAS	Infrastructure as A Service
IT	Information Technology
HPC	High Performance Computing
S3	Simple Storage Service
EC2/E2C	Elastic Compute Cloud
SQS	Simple Queue Service
BAM	Business Activity Monitoring
RFID	Radio Frequency Identification
BPM	Business Process Management
SME	Small and medium-sized enterprises
R1	Respondent 1
R2	Respondent 2
R3	Respondent 3
R4	Respondent 4
R5	Respondent 5
DOS	Denial of Services
DCaaS	Data Center as a Service
SDDCs	Software Defined Data Centers

Table 1: Abbreviation

Glossary	*Description*
Website Hosting	Website hosting considered as the utilisation of scalable infrastructure to cater to the dynamic website hosting requirements.
Application Hosting	Introduction of on-demand and reliable infrastructure to improve application performance from the hostel internal apps to the SaaS.
Information Technology	It is the use of computers to store, retrieve, transmit, and manipulate data or information.
Content Delivery	It is the service of copying the pages of a Web site to geographically dispersed servers and geographically distributed network of proxy servers.
Databases	Collection of organized information.

Table 2: Glossary

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Chapter 1: Introduction

1.1 Research Background

Cloud services or cloud computing services is the delivery of services associated with the available services such as providing servers, cloud storage for data, access to databases, networking facilities, software installations, and support, analytics services and intelligent services through the platform of Internet to ensure better and faster innovation, more flexible availability of resources and greater economic scales (Microsoft, 2020). The major areas that users of cloud services benefit in as per Microsoft (2020), are:

- Cost - reducing or minimizing the share of fixed costs such as cost of buying hardware and software and running offline on-site datacenters, electricity consumption, and other expenses.
- Speed – on-demand self-service aiding in assessing vast computing resources increasing business flexibility and reducing the pressure of capacity planning
- Global Scale - helps in the accurate scaling of global elasticity of the demand of It resources
- Productivity – Explicit focus on achieving the predetermined goals and objectives than on on-site requirements like “racking and stacking”
- Performance – The latest generation of computer hardware is used in cloud services resulting in decreased network latency
- Reliability – Inexpensive recovery from business risks and uncertainties, Backing up data for the smooth and effective functioning of the business organization due to data mirroring in various redundant sites within the network of the cloud provider
- Security - high security due to a wide set of technological control, policy, and regulations The

Amazon Web Services (AWS) was established in the year 2006 with the aim to provide infrastructure services to businesses on the Information Technology sector in the format of web services (AWS, 2020).

The most highlight-worthy benefit of using AWS as claimed by the company itself is the opportunity for the businesses to replace the advance as well as fixed expenses for capitalizing the infrastructure.

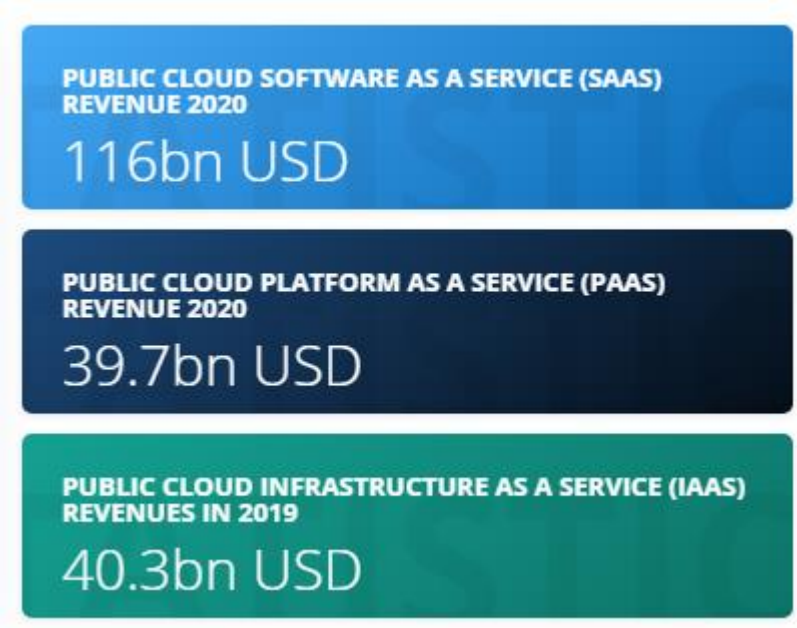

Figure 1: Financial Statistics of AWS

(Source: Holst, 2020c)

The range of services provided by AWS can be availed regardless of the sector or type of business. These services as per AWS, (2020) are as follows:

Services	Description
Application Hosting	Utilisation of on-demand and reliable infrastructure to improve application performance from the hostel internal apps to the SaaS
Website Hosting	Utilisation of scalable infrastructure to cater to the dynamic website hosting requirements
Backup and Storage	Utilisation of inexpensive and dependable data storage platforms to store vast data
Information Technology	Utilisation of both internal and external IT applications in a highly secure environment
Content Delivery	Utilisation of inexpensive and high speed of data transfer to quickly and easily deploy content to global users
Databases	Utilisation of a wide range of scalable database solution on hosted enterprise or non-relational database solution

Table 3: Services of AWS

The global retail business has been rapidly implementing the trends and practices of cloud computing within their business operations within the last 10 years to ensure better customer satisfaction and increase overall economic profitability. In this context, retail managers are utilizing the data derived from detailed data analysis which latter assists a variety of retail giants to effectively estimate customers' buying behaviors and the noticeable trends within the public from social media platforms. Some other retailers are utilizing CCTV footage and other video analytics to track customer movement patterns in retail stores to determine the section and time of display the customers are stopping at (Harrison, 2013).

The retail sector had a cumulative investment of $11.6billion in 2018 which is predicted to reach $48.47billion by 2025 (Virtual DCS, 2019). The two of the biggest retail platforms that use cloud

services are Walmart and Amazon. As per Virtual DCS, (2019) the key benefits that the retail industry, in particular, reaps by the usage of cloud services are:

- More efficient management of inventory
- Improved security of data
- Improved customer buying experience
- Greater financial profitability
- Cloud-based disaster management

In the context of utilizing cloud services in retail, Ireland based firms are highly lagging in these criteria as compared to their other European counterparts (O'Brien, 2018). As per O'Brien, (2018), 27% of the Irish firms are not equipped to deal with the increasing volumes of data. Only 64% of the Irish retail firms are contemplating a shift to cloud services as compared to that of 71% in Africa, the Middle East, and Europe. However, Ireland, being a small economy and the Irish retail sector businesses being small scale it would be easier for Ireland to “leapfrog” in the aspect of adopting this new technology (Lillington, 2014). Moreover, the Irish organizations are also doing a commendable job by adhering to the ideologies of innovation thereby, effectively bridging the existent technological gap (Lillington, 2014; White, 2018).

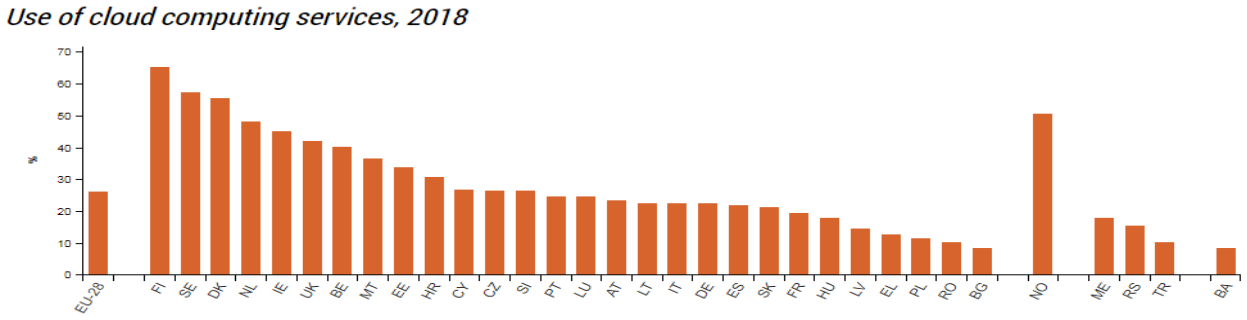

Figure 2: Statistics of Usage of Cloud Services in Enterprises of EU in 2014 and 2018

(Source: Europa, EU, 2018)

1.2 Research Problem Statement

The Irish retail sector is one of the slowest shifters to cloud-based operations. While the rate of willingness to shift to cloud services as the centralized operational practice in the geographical regions of Europe, Africa, and the Middle East is as high as 71%, it is only 64% in the case of Ireland (O'Brien, 2018). Further, the volume and value of the increase in the sales of the retail sector of Ireland were only 4.3% and 3.7% respectively in May 2020. The Irish retail sector has been experiencing a gradual fall in the rates of adoption of cloud services in the month of April 2020 which however stood at 43.40% in April 2019.

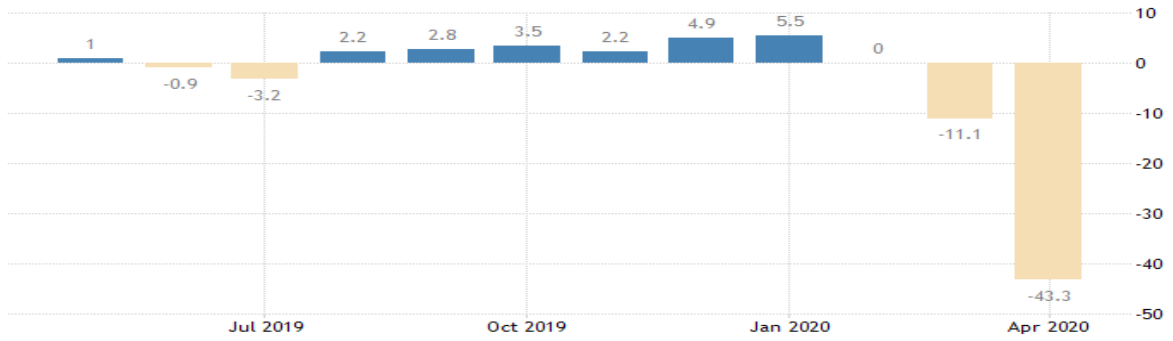

Figure 3: YoY Ireland Retail Sales

(Source: Trading Economics, 2020)

The Amazon Web Services, however, grew in revenue by approximately 9% in 2019 which is bewildering as to why the Irish retail sector has not considered a greater shift to cloud services by using WPS.

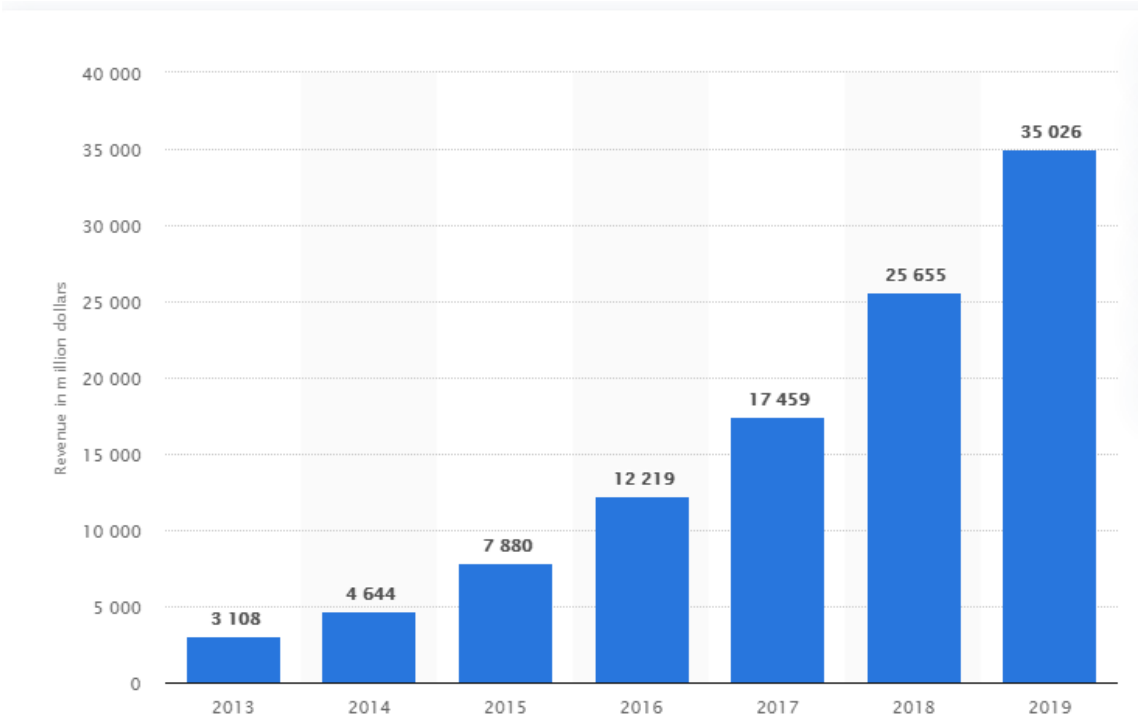

Figure 4: Annual Revenue Growth of AWS

(Source: Clement, 2020a)

1.3 Research Aims

Primary Aim

The primary aim of the research is to explicitly analyze the scope of influence of Amazon Cloud Services in Irish retail industry by exploring the share of benefits and losses in association to the customers purchasing patterns and decisions.

1.4 Research Objectives

Primary Objective

To identify the aspects for a cloud service to be efficient enough for satisfying the customer buying behavior

Secondary Objective

- To determine the cloud servicing processes followed in Ireland retail industry
- To analyze effectiveness of Amazon cloud services for the retail industry of Ireland
- The secondary objective of the research is to achieve the aim by the means of collecting primary quantitative data in order to identify the existing needs for the development of cloud services in the retail sector of Ireland.
- It will also focus on identifying the area of advancement for AWS to improve its services and aligning the two sets of requirements to recommend solutions for future utilization.

1.5 Research Questions

Primary Research Question

- What are the prominent challenges faced by the existing users of Amazon Web Services in the retail sector of Ireland?

Research Sub-Questions

- What are the most necessary developments that are required to pace up the rates of adoption of cloud services in the retail sector of Ireland?
- What are the instrumental technical and operational developments that are required for Amazon Web Services for ensuring better services and easier usability?

1.6 Research Hypotheses

H_0: The utilization of Amazon Web Services in the retail sector of Ireland has resulted in both significant advantages and obstacles to its economic growth as well as the rates of adoption

H_1: The developmental demands for Amazon Web Services is directly proportional to the economic development of the retail sector of Ireland

1.7 Research Expected Outcomes

From the research aims and objectives mentioned above, it can be understood that this particular study would shed light on the lack of research associated with the AWS services and its impact on the Irish retail market. Moreover, the research study would also focus on improving the available scope for AWS in the Ireland market. The extent to which it has flourished in the retail industry of other countries, the research would bridge the gap that exists for the AWS services specifically for the Irish retail industry.

1.8 Research Significance

The study would specifically be focusing on the influence of Amazon Cloud services on the Irish retail sector, thereby the extent to which it is increasing the Irish market since 2004, would be determined and further strategies that might be implemented in the services of the system particularly for this set of the target market will be analyzed. Henceforth, this report will have a two- way significance, firstly, it assists in understanding the purchasing behavior of the Irish customer and secondly, for Amazon to understand the difference in its service strategies in Ireland compared to the same in case of other target countries. This research paper will also be very significant for any researcher who aims to search for theoretical dimensions for the AWS services in Ireland.

Chapter 2: Literature Review

2.1 Introduction

The usage of cloud services in the global retail sector has helped to generate a greater customer base. However, the growth rate in the retail sectors is not as much as it is in the IT Sector. Also, the interdependence of the two sectors is ambiguous and requires extensive study of literature and real-life experiments to draw a conclusion. The scope and extent of the recent developments are also discussed with the help of statistical facts, thus effectively aligning it with progressions in R&D for each of the provided holistic solutions. Moreover, such solutions explicitly deal with the implementation of cloud services in the Irish retail industry in order to achieve the predetermined goals and objectives and maximizing profitability.

2.2 Current Statistics of the Irish Retail Sector in Terms of Cloud Service Utility

It is striking to note that the Irish retail sector is dominated by local companies which are mostly small scale and owned by families. As per the data provided by Retail Ireland, (2020), there are 37400 existing retail and wholesale enterprises in the country approximately. However, 85% of these enterprises have less than 10 employees and only 50% of these have more than 250 employees. IBIS World, (2020) in a market research report on the departmental stores in Ireland stated that the average anticipated growth of this industry was at 0.3%. The revenue growth has however been maintained at a lower percentage owing to the stiff competition posed by the clothes retailing shops, the supermarkets and the online retailers. The only two luxury department stores of Brown Thomas and of Arnott have succeeded to achieve significant growth as compared to their counterparts. IBIS World, (2020) further states that the market size of the departmental retail sector of Ireland stands at €2 billion and the total number of departmental retail businesses currently in Ireland is 645. This entire expanse of business employs over 14228 employees in Ireland who are both citizens and non-citizens.

Retail Ireland, (2020), on a broader picture of the retail sector of Ireland, states that it is the largest employer in the private sector and the largest industry of Ireland furnishing about 280000 jobs nationally which makes up 14% of the total employment of Ireland. 72% of this employed population resides outside the national capital of Dublin which is significantly higher than that of the “outside of Dublin” representation of ICT and the financial service sector of 50% (Retail Ireland, 2020). The Irish retail sector has been struggling from 2008 and in 2016 it marked a very low rate of growth of 1% in the second half as compared to 3% in the first half of that year.

The average consumer prices were down by 0.2% for the first half of 2017. However, the gross disposable income increased by 1.8% in 2016 adding to the prior growth of 5.3% in 2015 (Retail Ireland, 2020).

O'Brien, (2018) reported that about 27% of the current Irish companies do not have the capacity or competency to handle an increasing volume of data. As already stated in the problem statement, only 64% of Irish retail sector companies as compared to that of 71% of the retail sector companies in the Middle East, Europe, and Africa are kept on adopting cloud service-based operations. Cloud service is very essential for cost-effectiveness as on an average, an Irish company spends about €1.35 million on data storage in 2017. 67% of Irish retail companies are reported to be in the proximity of using cloud services (O'Brien, 2018). It is further estimated that there would be a positive surge of 72% in favor of cloud computing services in Ireland during the duration of 2018-2021.

There is, however, positive growth in the consumer economy of the retail sector of Ireland as the total expenditure by the households of the nation for various goods and services stand at €95.7 billion in 2016 (Retail Ireland, 2020). A whole new thematic area of improvement in the retail sector was the rise of online retailing in Ireland which has been increased from 10% to 50% in the last 10 years. In 2015, a total of €9.1 billion worth revenue was generated by the online sector however the entire revenue was not from retailing

2.3 Global Statistics of Amazon Web Services

Amazon Web Services is one of the highest revenue earners for Amazon (Holst, 2020a). The AWS earned a little more than 3 billion U.S. dollars in 2013 which has ballooned and gone as high up as 35 billion U.S. dollars in 2019. The cloud service market in the public forum of AWS is meant to reach 266.4 billion U.S. dollars and 364 billion U.S. dollars in 2022 (Holst, 2020a).

As per (Clement, 2020a) in the third quarter of 2018, the reported revenue of AWS stood at more than 6.67 billion U.S. dollars which were a rise of 45% as compared to the figures in the first half of the previous financial year. The total revenue earnings of Amazon Web Services in the same duration of the time were 56.58 billion U.S. dollars. The key contributors to the revenue were the components of the ***Amazon Elastic Compute Cloud*** and the ***Amazon S3*** cloud service providers ***(Refer to appendix 6)***. Clement (2020a) reported that the total consolidated net revenue of AWS amounted to 280.52 billion U.S. dollars out of which 74.7 billion U.S. dollars was earned from the international revenue sources and channels in 2019. The region which accounted for the most contribution to this consolidated total net revenue was the region of North America, accounted for more than 170.77 billion U.S. dollars in terms of net sales during the financial year of 2019. The TTM revenue of Amazon Web Services there was trailing revenue for 12 months which amounted to 37.5 billion U.S. dollars as compared to that of 35 billion U.S. dollars of the preceding year (Clement2020d).

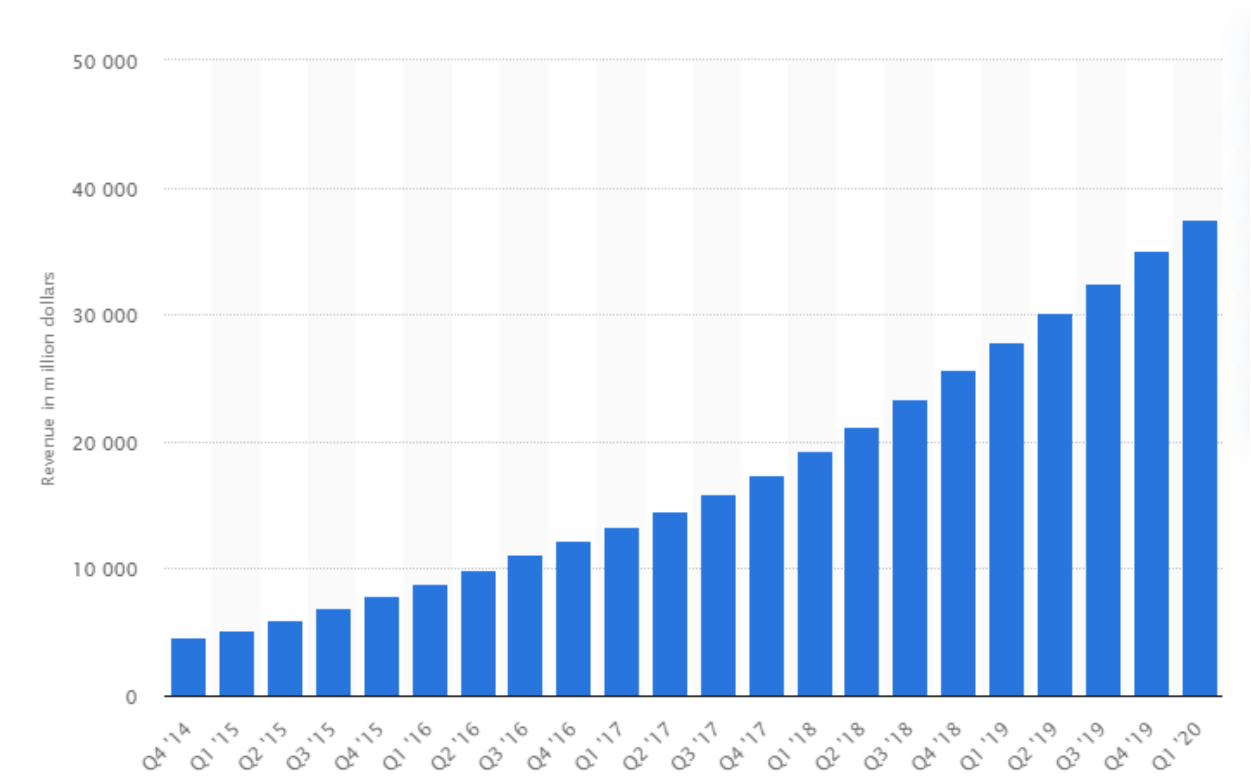

Figure 5: TTM Revenue of AWS in 4th Quarter of 2014 to 1st Quarter of 2020

(Source: Clement, 2020d)

As per Clement, (2020c) the quarterly revenue growth of AWS in 2020 was as high as 33%. In the context of the global IT service revenues, Holst, (2020b) reported that the Amazon Web Services earned about 25.7 billion U.S. dollars in 2018 behind its competitors of IBM (46.8 billion U.S. dollars), Accenture (41 billion U.S. dollars) and ahead of competitor Fujitsu (23.8 billion U.S. dollars).

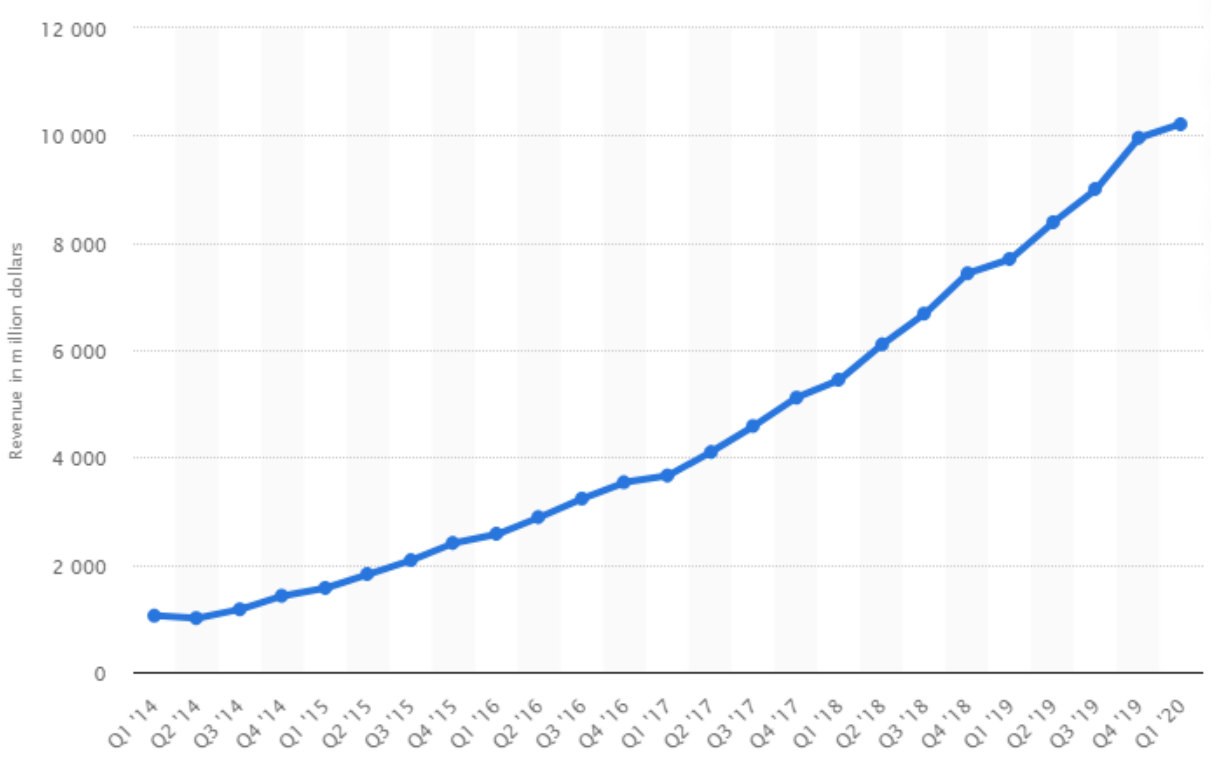

Figure 6: Quarterly Revenue Generation of AWS in 2020

(Source: Clement, 2020c)

2.4 Developmental needs of Amazon Web Services

A Recent market survey propagated by a third party has depicted the fact that 49% have been reactive to the cost-based barrier of AWS systems. Organizations utilizing *high-performance computing (HPC)* still possess ambiguity regarding the competence of cloud with on-premises centers of data at an affordable and flexible cost. The majority of the organizations have expressed concerns about internet connection latencies of the organization (HPCwire, 2020). In this context, one of the developmental needs of AWS is inclined to increase its capability in terms of elasticity, raw performance, and scalability.

HPC is regarded as an essential function by the majority of the industries however misconceptions on AWS driven high-performance computing have prevented these industries from experiencing the benefits such as advanced business insights, unprecedented agility, and scalability from the AWS system (Refer to appendix 4). Barriers are needed to be removed in order to accelerate

the adoption of AWS, through the transformation of the risks, present in the inbuilt security system of the software. Coupling of native services of AWS with a strategic and vigilant framework would pave the way in terms of the rapid adoption of the software. Thus, the second developmental requirement of AWS would be to integrate a pathway to security roadmap for ascertaining the accountability of the organizations on improved customer control responsibilities. Further for the maintenance of the scalability of the retail sector with AWS, there is a requirement of in-house integration and extension of in-house security technology with the mentioned cloud computing system. The transformation of the retail sector through AWS could only be possible by a shared responsibility model. In these premises, the developmental requisites could be attained through the proper understanding of the configuration of AWS by the enterprises (Brown, Campbell and Dhaval, 2020).

Moreover, virtual components that are determinative towards the deployment of AWS are required to be recognized by the enterprises more specifically retail enterprises in order to incorporate proper security controls. Lastly, the factors related to the development requirements of AWS in terms of ascertaining the organization regarding its cost effectiveness and flexibility

include vitalities needed to be considered by the organizations. These factors are maintenance of the cost for the legacy systems, shaping of the needs to legacy replacement to eradicate the issues of cybersecurity, and leveraging digital transformation for attracting talent (Ali, 2019). Therefore, the developmental needs of AWS coincide with the perception of enterprises in terms of accepting and adapting it for future benefits.

Being one of the best locations for the bricks and mortar stores, the Irish retail market has a huge demand for its big destination, suburban malls, and high-street locations. However, **growth in online shopping and transactions are negatively affecting the revenue generation of the bricks and morter stores of the retail industry**. With the establishment of the bricks and mortar stores, the economic impact did a positive drift directly to many sectors. Therefore, companies with property investments were a direct source of greater income and revenue generation within the industry. However, property investment companies are not only the ones that are eschewing mortar stores (Comiskey, 2018).

As an example, the off bit switching of the Swedish home furnishing giant, Ikea can be taken into consideration. Back in 2018, the company was looking for locations for the second flagships in South Dublin, but now the track has been changed after the launch and great success of Irish web sales platform to strong online sales. The change in the business track has been implemented within a span of one year, thus reflecting the fact that online shopping, asset logistics, and cloud service facilities are working in favor of the customer satisfaction, as well as for the foreign companies. Particularly for the Irish retail industry S3 and E2C are being used for Simple storage services and Elastic computing clouds respectively.

Hence, hassle-free experience is held both by the company, as well as the customers. Previously, when customers used to visit a site or search for online products with a huge dependability, technical faults and glitches were very common (Hern, 2017). The biggest benefit for retailers is that they are provided with storage as well as computing systems. The storage systems are primarily in terabytes, thus giving a huge platform to store information, and remaining storages are also highlighted, thereby making it easier for the management to handle the server efficiently.

2.5 Amazon Cloud Service (AWS) influential factors on the Irish Retail Sector

According to Mukherjee (2019), Amazon cloud services are developed in terms of delivering multiple benefits for the retail industry in Ireland. In terms of cloud services, Amazon develops multiple cloud applications such as Amazon S3, AWS storage gateway, EC2, SQS, DynamoDB, and Redshift. With the involvement of such cloud applications, different retail organizations are able to develop the business process by securing the essential information. The following section defines the different influential factors of Amazon cloud services:

Data protection: Mukherjee (2019), defined that the data protection is considered as one of the important aspects for online retail business in Ireland. In this aspect, Amazon cloud services deliver better advantages for the online retailer in terms of data protection. The company gained $23bn of profit by delivering cloud services to electronic retailers in the global landscape (Hern, 2017). At the same time, the company also delivers potential opportunities for food and beverage retailers in Ireland by delivering cloud services.

However, the data loss can generate multiple complexities for a retail organisation by decreasing the brand image of a retail organisation. In this aspect, Mukherjee (2019) also defined that the authorized use of cloud services provides

facilities for an organization for transferring sensitive information. The following diagram represents the development of retail sales of different sectors such as fashion, electronics, food, personal care, and others. It can be identified that **fashion and clothing stores** out of a total 133 retail are highly influenced due to the involvement of Amazon cloud services in Ireland (Sabanoglu, 2020).

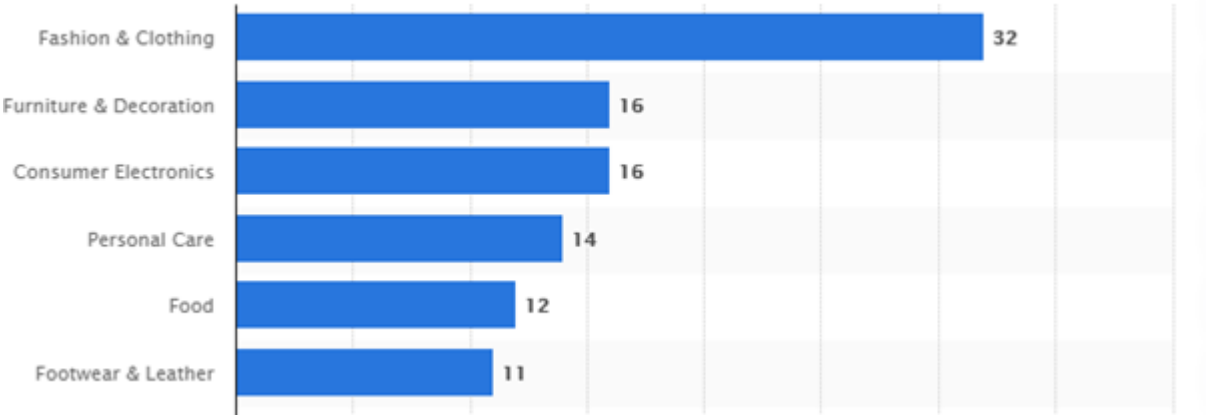

Figure 7: Development of retail sales in Ireland for cloud services

(Source: Sabanoglu, 2020)

Flexibility in business: The flexibility in retail business can develop the brand image for developing the profit margin. In terms of retail services, it is essential to modify the data leads with the involvement of the AWS cloud system ***(Refer to appendix 5)***. In this aspect, Striapunina (2019), defined that the cloud computing services permit employees of an organization for accessing files through different web-enabled devices.

Moreover, the cloud computing process delivers the opportunity of using mobile technology by delivering valuable administrative capacity. In this aspect, Amazon develops a joint venture with renowned Irish company Game Sparks for developing the cloud services. The following diagram defines the step by step integration of amazon retail services in Irish retail.

Figure 8: The usage of AWS cloud services in retail industry

(Source: Amazon, 2020)

Cost effectiveness

The cost-effectiveness of cloud services is considered as an influential factor that has the potential to develop a retail organization. In terms of Irish retail, the cloud services market gains rapid enhancement by generating the revenue standard at 384.9 million U.S. Dollars (Striapunina, 2019). In this aspect, it is identified that most of the retail business in Ireland introduces Amazon cloud services for developing the business standard.

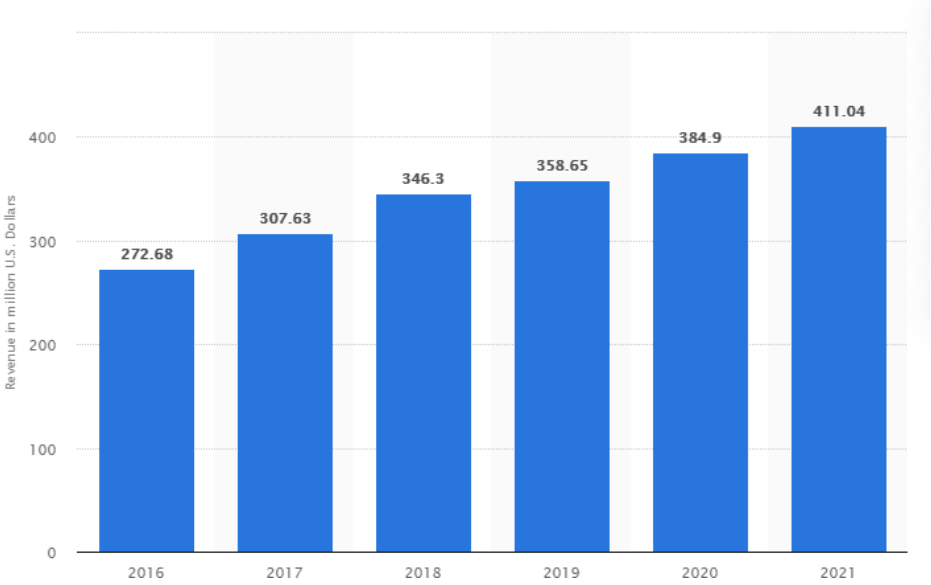

Figure 9: Revenue standard development of cloud services market in Ireland

(Source: Striapunina, 2019)

Secure backend platform and services

The secure backend platform and services are considered as strategic measures provided by Amazon cloud services. It is identified that Amazon delivers multiple opportunities for the retail industry in Ireland such as ***API's protected backend facilities, monitoring server log, server, access control,*** and ***secure data allocation among web and cloud servers***. By the introduction of such backend services, Amazon was able to develop a strategic relationship with different retail organisations in Ireland. For instance, Unilever Ireland introduces ***Amazon Web Services (AWS)*** in terms of conducting backend services. Apart from that, several Irish retailers use cloud services for the development of financial standing in the global market.

Developing productivity and scalability

Productivity and scalability are regarded as one of the essential factors for developing the business margin of an organization. In this aspect, Amazon cloud services mitigate the obstacles regarding the workforce maintenance process inside a retail organisation. By developing workforce effectiveness, a retail organization can generate huge profitability in the Irish market. As reported by Mukherjee (2019), almost 79% of global users have gained a better revenue standard due to the involvement of Amazon cloud services.

2.6 Cloud Computing based security issues of Amazon

According to Al-Qahtani and Gull (2018), cloud computing is considered as the method of storing and accessing essential information without any help from physical media. However, in terms of Amazon cloud computing services multiple obstacles induce security risks and vulnerabilities for the online retailing process. Moreover, Hussain et al. (2017), identified that different types of security risks are occurring related to integrity, confidentiality, and availability.

Denial of Service (DOS) is considered as one of the security risks in terms of cloud computing services. In this aspect, a cloud owner's resources can be hampered that ultimately damage the business structure. Additionally, the security flaw of cloud services ultimately creates a devastating effect on the online retail business process. Hussain et al. (2017), stated that cloud services have the layered architecture that delivers different control and services for end users. In this aspect, different security problems are occurring that ultimately decrease the cloud services.

structure that results in decreasing the financial standard of online retail business. The following image defines the security problems involved in the classification model of cloud storage.

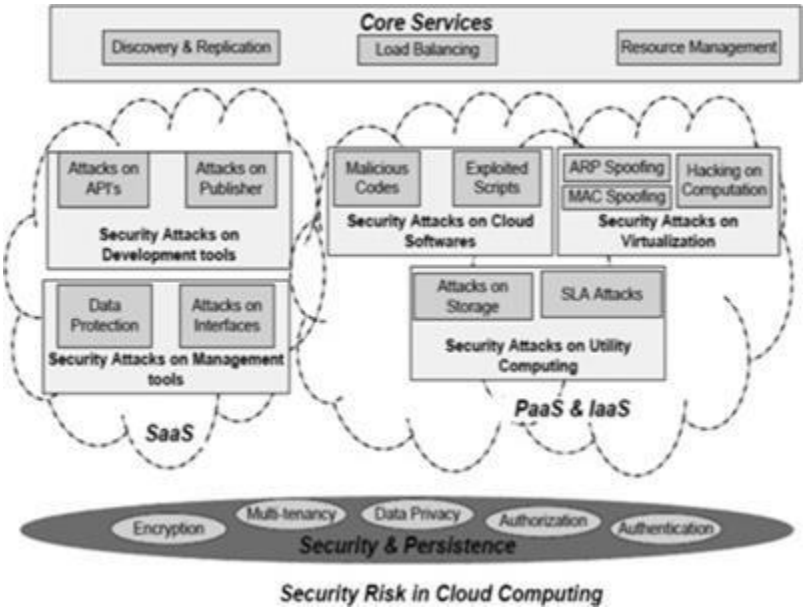

Figure 10: Different types of security problems in cloud computing
(Source: Hussain et al., 2017; Kumar, Raj and Jelciana, 2018)

Based on the above diagram, it can be noted that PAAS, SAAS, and IAAS layers of cloud computing are confronted with security problems. Therefore, it is also identified that Amazon cloud computing services are contracted with multiple security risks. For instance, Amazon Elastic Compute Cloud (EC2), Amazon IA, and AMIs are affected due to the security risks (Hussain et al., 2017). Due to the cause of exploiting vulnerabilities, an individual can illegally extract any sensitive information from the cloud. Moreover, in terms of using Amazon EC2 services, different users. faced with multiple obstacles for using an automated system.

On the other hand, in a competitive environment, the company also faced multiple complexities due to the security issues in the cloud computing market. In this aspect, it is essential to mitigate the security complexities with the involvement of skilled individuals in Amazon.

2.7 Adaptation of Amazon Cloud computing in the retail industry

Computation and tracking are the important parts of functionality of the retail industry, in order to maintain sustainability of the productivity and sales. Therefore, the current information and communication technology (ICT) paradigm proposes Amazon based cloud computing services for conducting different operations and functions of the retail sector. Alternatively, the retail sector might adopt cloud computing technology which is launched by other industries apart from Amazon cloud technology. Although, it has been found that other cloud service providers lack the economic effects such as insufficient storage capability and inappropriate time dimensions. On the other hand, cloud services provided by Amazon are very efficient in each of these aspects in comparison to other service providers of cloud that makes it economically effective. One of the potential attributes of Amazon cloud computing technology is its better storage that further enhances its adaptability in terms of retail operation (Candel Haug, Kretschmer and Strobel, 2016). The business activities in the retail industry comprises a lot of information regarding customer and inventory management. Hence effective storage capability of Amazon cloud technology reduces the requirement of cost for additional hardware in order to store data.

Moreover, cloud computing technology facilitates retailers with on-demand distribution features that help one to deal with urgent situations in the supply chain system.

Universal access to applications is one of the features of Amazon cloud services that saves a lot of time for retailers. In addition, database intelligence improves the visibility of stakeholders involved in the business process of the retail sector toward information. Consequently, the Amazon cloud services reduces the probability of deviation in standard procedure in terms of different operations of supply chain management systems (Candel Haug, Kretschmer, and Strobel, 2016).

Moreover, the major consumer of cloud service is a firm that makes its business to business market by setting up a product range starting from cloud-based IT solutions to solo service. Therefore, the contribution of Amazon cloud services extended with advanced features just like the features of Google Drive, Windows Azure, and Blue Cloud belongs to other vendors. However, prioritizing the amazon cloud computing technology in terms of adaptability is somewhat contradictory as Azure and Google Drive are commonly used in the retail sector. On the other hand, few specific characteristics of Amazon Cloud technology uplift its priority among other cloud services such as *cloud carriers* or *cloud enablers*. For example, cloud carriers make away by connecting between provider and consumer through internet accessibility. Hence, the retailer would be able to communicate with its customer directly with the help of cloud carriers. Similarly, another attribute of amazon cloud technology is a *cloud enabler* that facilitates the retailer with delivery and adoption.

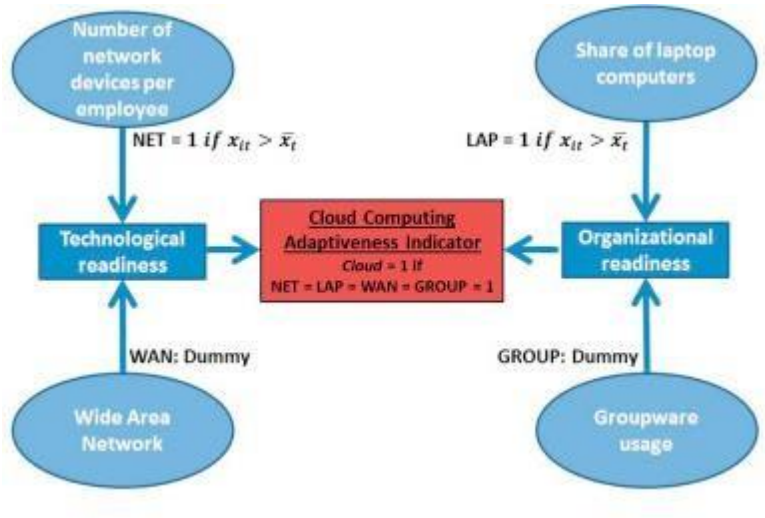

Figure 11: Diagrammatic representation of Cloud computing adaptiveness indicator

(Source: Candel Haug, Kretschmer and Strobel, 2016)

From the above diagram, it has been observed that cloud computing adaptability also is measured in terms of numbers of systems and network conglomerate at a single periphery to develop a single unit for many communicators. Thus, Amazon cloud computing technology facilitates retailers with these attributes that have been shown in the above diagram. Moreover, based on the above discussion it can be apprehended that Amazon's cloud computing services are highly adaptable and effectively satisfies with the parameters of the retail industry due to its uniqueness and ability to simplify business operations.

2.8 Compliance Issues of Cloud Computing

Cloud computing is a kind of technology whose compliance is assumed to change frequently when the user gives some instruction on the real-time basis. The lack of transparency and control is another significant compliance issue of cloud computing.

The data that has been stored in the cloud mechanism could be duplicated in different countries or regions leading to a violation of the privacy laws. In this respect, the service providers are needed to enable the accountability, integrity, and confidentiality of the customers' data, as directed by the regulations of the government. Shared responsibilities and complexity are those security threats that could adversely impact the entire compliance. It has been found that cloud computing is somewhat new, and changes are still going on. Proper recognition of compliance threats is necessary to acquire the confidence and trust of the consumers. Compliance is managed by several groups who lack efficiency in handling the security (Yimam and Fernandez, 2016). Many of them are not that effective in furnishing highly secured architecture and are unsophisticated in nature. Hence, it is that compliance issue of cloud computing which might create a problem for users in terms of its flexible functions. However, the on-demand scalability feature of cloud service somewhat contradicts the problem statement regarding the compliance issue of cloud computing. The feature facilitates the user to acquire more cloud virtual machines to deal with workload surges. Apart from Virtual machine time delay, there are other problems that exists in cloud computing in terms of security and privacy. compliance refers to the enforcement of rules based on which policies are implemented on a system. Thus, cloud technology yet does not possess strict legal compliance so that its user can be assured of the security and privacy of given information in this platform. On the other hand, governmental regulations are mandatory for each business in terms of non- functional requirements of the business (Yimam and Fernandez, 2016). Although, it is not possible for the cloud because of its accessibility in the global context and regulations varies from one nation to another nation.

The analysis of the architecture is very easy for any stakeholder which might create a compliance issue for the company in the context of business. In other words, a breach of business information can take place by some unauthorized elements. A majority of cloud service providers are needed to support multitudinous regulations for satisfying the needs of the consumers. According to Yimam and Fernandez (2016), the overlapping of regulations within cloud computing can also lead to incurring the irrelevant cost and high instabilities. However, the cost of incorporating individual regulation can result in inconsistencies and duplication of efforts. Further, there is also a lack of proper definition regarding the aspects that the Reference Architectures (RA) should contain. The available approaches do not utilize an inclusive model that comprises both the non-functional and functional requirements. Due to this, it has been found that the RAs are either defective or do not follow the quality models properly leading to vulnerabilities.

2.9 Transformation of Retail Sectors by Cloud Service Utilization

The transformation of the retail industry is witnessing a major inclination towards digitalisation and the incorporation of cloud computing services in their daily operational practices. In this relevance, Mallick et al. (2005) has stated that to achieve the degree of competitive advantage in the highly competitive retail sector, optimization of the dynamics and mechanisms of attaining data and resources has a crucial dependence on the temporal efficacy of the whole system. Mallick et al. (2005) further state that not just timely but also real-time data is crucial for each phase manager of a retail company.

The web services of BAM, RFID, and BPM are the fast-emerging technologies that are benefiting the retail sector in this transition. In an overview report by one of the global leaders in cloud services of AWS (2014), the transition from conventional data storage and utilisation to cloud-based storage rest on five-key benefits namely, flexibility, sequential data processing, cost-effective installations, elasticity in AWS services, effective security and expertise services and lastly elasticity. AWS (2014) has stated that retail sector companies are transitioning to AWS in various platforms and interfaces such as database management, storage and CDN, cross-services, computer, networking and analytics, application services and lastly deployment and management of data and resources.

In order to evaluate a more technically intense transition tool and application of cloud services in the retail sector, Anderson and Bolton (2015) has highlighted that the scope and efficacy of sensory devices assist in enhancing retail intelligence within a store, thereby decoding and interpreting customers' buying pattern, notions, and trends associated with the purchase of goods. However, the key hindrance to this technological application is the discrepancy in the number of suppliers or vendors who manufacture and install the sensory devices and the difference in the temporal and analytical configurations which will lead to discrete data analysis and further inaccuracy.

A different aspect of the utilisation of digitalisation and cloud services in the retail sector was addressed to by the study of Hänninen, Smedlund, and Mitronen (2018) in which it has been stated that one of the most important reasons for this transition is the generation of the scope for the customers and the suppliers to have a direct flow of both information and feedback in order to improve the business and market dynamics in the retail sector.

Amazon has been a pioneer in providing cloud service facilities in this newly cultivated era of online retail business and marketing. The IT infrastructure of Amazon ensures to handle the peak periods and increasing demand. Due to fluctuating peak seasons, the extent of remaining idle in the competitive market increased for Amazon. In order to monitor the idle capacity of the company, The Elastic Compute Cloud (E2C) was introduced in 2006. The services that were included in this E2C service were ultimately combined with developers for a greater level of applications and services. In this way, the data storage service S3 and the classical IaaS offerings were included subsequently. Eventually, the initial stages of rapid success helped the company to move well beyond utilizing the excess capacity from the core retailing business to driving future investment in new services and data centers.

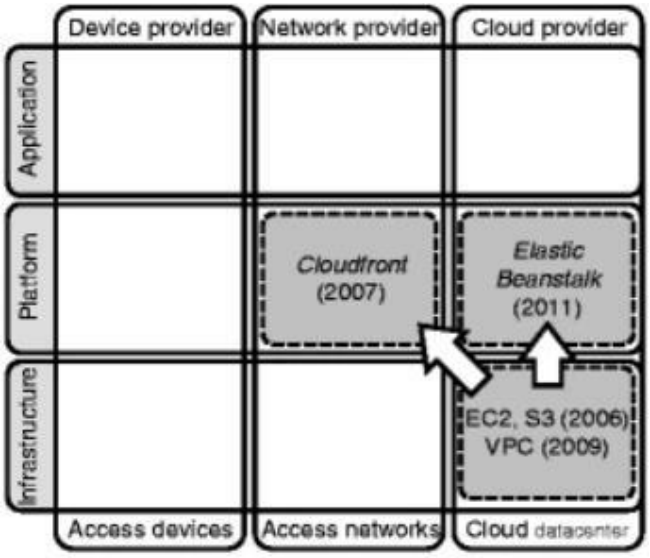

Figure 12: Amazon strategy in the cloud service network

(Source: Kushida, Murray and Zysman, 2011)

The company has been able to move from the IaaS roots in both Access Networks and Cloud datacenter. With subsequent advancement in the technology, the company in 2007 introduced a Cloud Distribution Network Service called the CloudFront with the aim to accelerate the response times for the commonly requested information regardless of the location for questioning. The major data center location of the company thus included countries like Ireland, Netherlands, Singapore, Japan, and Germany. Coming to the fact that retail business is one of the biggest contributors to the Irish exchequer, 23% of the overall tax receipt is generated from this industry only. In contrast to the second largest economic contributor to national growth, the finance industry generates only 11% of the comprehensive tax receipt, which is less than half of the contribution made by the retail industry.

It signifies that technological growth, market demand, international expansion, and highest employment are consistent in the Irish retail market more than any other sector or industry. Besides, the tax revenue of the Irish Government has grown over €7 billionin the past three years (Retail Ireland, 2020b). Therefore, the technological drift and contribution to the growth of the industry are worth analysing. With the ever-increasing regulatory burdens and rising business cost, the vision of the retail industry in the country which aims at grounding around 4 pillars, career, confidence,

Competitiveness, and community are becoming difficult to achieve as per the "Shaping the future of Irish retail, 2020". The vision to foster a thriving and leading retail industry, a positive impact on the customers, and the environment for the employees are highly necessary. Henceforth, the application of Amazon cloud services comes into consideration for the Irish retail industry (Retail Ireland, 2020a). Around 87% of the retail SMEs of Ireland, working with employees at less than 10 in numbers. Therefore, to build up an opportunity from the government, technological simulation is highly necessary. The percentage of customers using online mediums for making everyday transactions are increasing. Tremendous expansion in the enterprise Ireland's Online Retail scheme is needed. This will pave a way for the retail SMEs to generate better profitability and grow into the future in a competitive manner. Besides, the Local Authority (Rates and Other Matters) Act 2019 which was implemented with the aim to address the streamlining rate system, did not work well. Rather, it became a burden for most of the SMEs to manage the revenue with the rate charges decided. Therefore, further reformations in the rate collection system are required to attenuate the current revaluation process (Retail Ireland, 2020c).

In order to achieve this benchmark, reduction of the property tax rates cannot work proportionately with the equitable businesses to raise the shortfalls in the revenue generation. Hence, technological advancements shall work in a positive manner for the SMEs rather than the rates system. The easy access for cloud systems and centrally operated cloud services can be a great and affordable alternative to this. Eventually, the government might raise the insurance premiums generated from the industry and will ask to boost the skills. At the very elementary level, these steps and plans can be very much expensive and time taking, but with the technological shift, the process can elevate without much economic impact to the sector or the Government.

2.10 Conceptual Framework

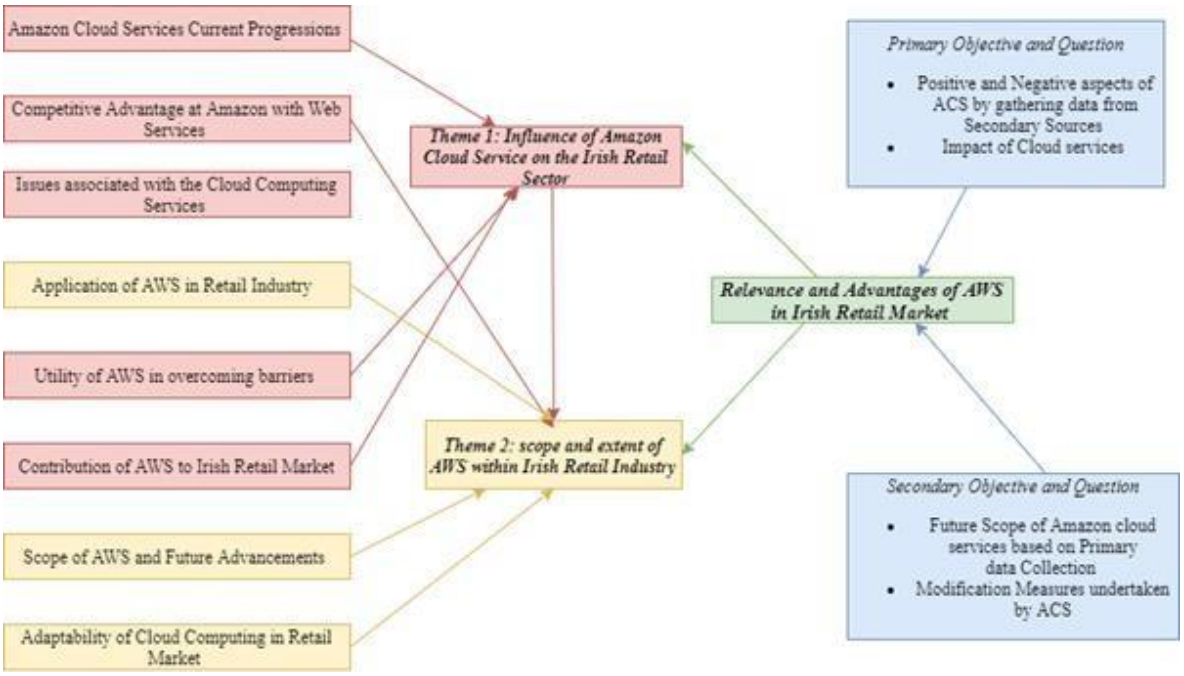

Figure 13: Conceptual Framework

The above figure represents the sequential outlay of concepts and ideas that helps in laying a coherent discussion on the selected topic. From the figure above it can be analysed that the dependent variables are categorised on the left-hand side, while the independent variables are enlisted on the right sides of the figure. Additionally, each of the listed dependent variables further confines to any one of the independent variables which also happens to be the generated themes of the study. In order to lay a coherent discussion on a variety of aspects associated with the use of Cloud Computing Systems within the Irish retail markets, the research has relied on framing actionable aims and objectives confined to the primary and secondary research question. For the collection and analysis of data,

in order to testify the gathered facts, the researcher has relied on the use of primary data collection and analysis techniques, which in turn help in gathering inferences about the relevance and scope of Amazon Web services within the Irish retail industry.

2.11 Literature Gap

The current study explicitly focuses on contextualising the pertinent impacts of Amazon cloud services within the Irish retail industry. Therefore, in order to coherently discuss and analyse the matter researcher has adopted a primary research design to conduct surveys and interviews. Moreover, to determine and discuss the utility of AWS thereby, evaluating its future scope the study was prone to the recurrence of a majority of information and research gap that might deteriorate the quality of inferences.

Firstly, excessive dependence on primary data collection and analysis has further reflected on the inability to correlate the pragmatic inferences drawn from the data collected from the study with the factual data thus, building a rational discussion. Secondly, there was a lack of empirical evidence directing towards the need for cloud computing systems within the Irish retail market specifically.

2.12 Summary

It can be concluded from the above analysis that Amazon Web Services (AWS) is a comprehensive cloud computing system that confines a mix of IaaS, PaaS, and SaaS functions. Despite the large-scale implication of the system, it is still in its evolving stages. As illustrated formerly in the study that the service was developed in order to provide additional benefits to customers in the retail sector. The above section has succinctly discussed and highlighted the pertinent uses of AWS in the Irish retail industry. Therefore, it can be inferred that the effectiveness of the services provided by Amazon has further contributed to enhancing the rate of adoption of cloud computing systems within Ireland.

Chapter 3. Methodology

3.1 Introduction

The methodology for this current study regarding the impact of Amazon cloud service in the Irish retail sector is extremely important for organizing the research method necessary to fulfill the research aim. In this study, the methodology will critically assess the overall reliability and validity of the tools and techniques that have been used. In simple terms, the methodology will provide a systematic plan for the entire research, necessary to solve the research problem. It aims to manifest the most rigorous design for acquiring the purpose of the current study. It will evaluate the overall strategy that has been used to collect data in order to get the expected result.

The methodology section will survey so furnish justification behind taking the respective approaches necessary for obtaining the aims and objectives of the research. The Future outcome of the research subject, that is, Amazon cloud service, could not be ascertained to a credible prospect devoid of research methodology. The pathway for the conductance of the research on the similar subject could not be developed if suitable research tactics and mechanisms are not incorporated. This section will discuss in detail the number of participants recruited for the data collection process, research design, the important materials, research procedure, ethics, and finally data analysis. In short, it intends to describe the wide philosophical underpinning oriented to the selected research methods.

3.1.1 Types and number of samples

The following research aims to determine the impact of Amazon Web Service (AWS) in the retail sectors of Ireland, for which both recent authentic secondary data as well as the opinion of personnel associated with the marketing or digital marketing of Irish retail companies are required to be explored. In order to understand the relation of AWS with the growth of retail companies in terms of profitability and customer satisfaction, both surveys and interviews will be conducted. The survey will be conducted in order to determine the effect of AWS on Irish retail companies, for which a total of twenty employees associated with marketing in retail industries in Dublin will be selected. As a result, the method of sampling will be probabilistic, which confirms the obtaining of a suitable sample in order to provide a statistically valid research inference. Based on the ***probability sampling*** technique, the samples will be chosen based on the respective LinkedIn profile of the executives, where the demographic attributes will be the selection parameters of the suitable sample. Therefore, the aforementioned sampling will be dependent on a ***stratified probabilistic sampling*** technique, in which the samples will be selected on the basis of well- settled demographic attributes, and then further sampling will be finalized. In the case of the interview process, five marketing managers of Dublin from different retail companies will be selected through the aforementioned approach, which is the stratified probabilistic method.

3.1.2 Demographics of participants

Based on the information given in the LinkedIn profile, such as age, gender, and working experience, I will select suitable participants. For instance, the age range of participants would be 30-40 whereas, the working experiences would be more than 5 years. The selection of samples based on aforesaid limiting components, will help me to communicate with young, interactive but experienced marketing managers as well as employees of digital marketing, which will help to give an appropriate conclusion by determining the effect of AWS on Irish retail industries. Moreover, gender is an important demographic characteristic, which I will mainly use during the sampling of the survey.

3.1.3 Selection of participants for the survey and interview

In order to select appropriate samples for the accomplishment of the research, I will track marketing professionals working at various retail companies in Dublin, Ireland. Based on various demographic attributes I will choose suitable individuals through their LinkedIn profiles. After selection, I will communicate with them on behalf of Dublin Business School, and approach them to take part in the survey and interview procedure.

3.2 Design

As the research is based on both quantitative and qualitative methods, the research philosophy will be pragmatism, which will give importance to the research question and thereby help to generate potential outcomes of the research (Saunders, Lewis and Thornhill, 2016). An inductive research approach will be taken, which will efficiently interpret research outcomes by proposing new theories.

3.2.1 Research Philosophy

The pragmatism research philosophy was undertaken for this research. The premises of the subject area are very true, and the research findings would also be highly value-driven and true. The research objectives in research based on positivism philosophy are problem-based and the outputs are problem-solving oriented (Morgan, 2014).

3.2.2 Research Approach

The induction research approach was chosen for the dissertation. As per this approach to research theory development, the premise of the subject area is true, and the conclusions are mostly untested. The generalisability of the findings is from the specific to the general which is the case in our research.

3.2.3 Research Methodology

The **mixed-method** complex was chosen as the research data collection method. In a mixed-method complex methodology, both qualitative and quantitative data from both primary and secondary sources are included and are subject to cross-evaluation to generate recommendations or identify data trends and patterns (Petticrew et al., 2013). Our research has secondary qualitative data analysis (thematic), primary qualitative data analysis (interview), and primary quantitative data analysis (survey) to justify the choice of the methodology. However, the secondary thematic analysis has been chosen to obtain the primary objective of the research.

3.2.4 Research Strategy

To meet the research objectives and methodological choices, three research strategies were undertaken which were:

Qualitative data analysis Thematic analysis	**Primary**: ***Narrative Inquiry***: To collect primary qualitative research data	(Riley, 2004)
	Secondary: ***Archival and Documentary Strategy***: For collection, documentation and analysis of secondary research data through thematic analysis.	(Zhou, 2008)
Quantitative	***Survey Strategy***: To collect primary quantitative research data	(Butts, 1983)

Table 4: Research Strategy

3.2.5 Research Time Horizon

The time horizon of the data collection of the research was a mix of both longitudinal and cross-sectional natures. The survey and interview responses represent a cross-sectional nature of the dataset whereas the review of literature represents a longitudinal contribution to the dataset of the research owing to the temporal duration of the literature assessed and evaluated (Rindfleisch et al., 2008).

3.2.6 Independent variable AWS

The Independent variable, the variation of which is not influenced by other variables, for the following study will be Amazon Web Service (AWS). As a marketing tool, retail companies use AWS, which gives proper data analysis as well as cloud-based data protection in order to implement strategies for higher profitability by analysing customer demands. Therefore, AWS is

considered as an independent variable, as it influences the variation of different aspects.

3.2.7 Dependent variable

Profitability or loss of Irish retail companies

The following research aims to determine the effect of AWS on the retail sector of Ireland, which makes it a dependent variable. As stated by Algrari (2017), organizational profitability depends upon the application of cloud services. Based on the aforementioned statement, the following research will determine the dependent variable, which is “financial profitability or loss of Irish retail companies” due to the application of the independent variable AWS.

Customer satisfaction

Customer satisfaction is another dependent variable for the research, where the effect of AWS as an independent variable on it will be determined in order to make a direct interpretation regarding the impact of AWS on the retail sector of Ireland.

3.2.8 Recruitment of participants

After the selection of suitable participants through LinkedIn based on various demographic attributes, I will make contact with them through the Linked Profile and describe their essentiality for proper significant outcome generation of the research. As a DBS student, I will approach them to contribution to business management research. After approving my offer, I will ask for their valid email ID, in order to send them the consent form, in which the mode of survey and questionnaire will be given. Apart from this, based on the consent form, I will ensure the

participants about data anonymity based on the General Data Protection Regulation of the EU.

3.2.9 Actual design of research

The main objective of the following research is based on the interpretation of the effect of AWS on the retail sector of Ireland, which implies the adoption of ***Experimental research design***. According to Mitchell (2015), the aforementioned research design helps to understand the effects caused by the independent variables. As a result, the experimental design will help to highlight the impact of the independent variable, which is AWS, on the dependent variables, namely financial profitability or loss of retail sectors of Ireland and associated customer satisfaction level.

3.3 Material/Apparatus

3.3.1 Material

In order to conduct both quantitative and qualitative data analysis, the availability of different technical tools and other materials is necessary. A debrief sheet of the interview and survey questionnaire is essential along with the information sheet. Furthermore, as the research will be conducted through online mode, due to the COVID-19 pandemic situation, a web conferencing application, called ***Cisco WebEx*** will be used in order to accomplish the interview efficiently. The cause behind the selection of the aforementioned conference software is data protection, as there is no information regarding data piracy from Cisco WebEx. During the online interview, a total of 5 descriptive questions will be asked to the participants, regarding the utility of AWS, the impact of this computing platform on Irish retail industries and associated positive and negative outcomes. The questionnaire will consist of 8-10 key terms, such as, AWS, data analytics, online,

organisational effect, and customer, which signifies the connection of the questionnaire with the research objective.

On the other hand, the quantitative data analysis will be based on ***email surveys***. A total of 12 questions, developed on the basis of a Likert scale will be sent to the participants, through their email ID. Based on the ***Likert scale***, each survey question will be asked based on 6 options, which will help to determine the positive, negative, or neutral perceptiveness of the respondent's answer.

3.3.2 Apparatus

I will use my laptop as a main apparatus for conducting the interview. Moreover, I will send survey questionnaires through my laptop and further communicate with the respondents. simultaneously, a microphone will be used in order to communicate with the respondents. Furthermore, a voice recorder will be used during the interview in order to capture the opinion of respondents. Apart from this, I will use a checklist in order to track the response number.

3.4 Procedure

Both the qualitative and quantitative data collection will be based on interview and survey. The **interview of five marketing managers** will be taken separately on five different response recording periods. Initially, the interview questionnaire will be prepared in order to maintain actual parameters of an ideal descriptive interview. After preparation of interview questions, the marketing managers of different retail companies of Dublin will be invited through email for seeking their consent to provide information for the study. After receiving the email consent, the Cisco meeting ID, password as well as the allotted time slot will be given to each respondent

respectively. Due to the open-ended nature of the interview question, a five minutes gap will be given after each question in order to make the respondents mentally stable by eliminating the impact of internal and variables, which could affect respondents.

On the other hand, a set of instructions will be mailed to 30 participants in order to clarify the procedure of email survey and timeline. After receiving the mail, the questions will be sent to all respondents in a similar time, and a total of 1 hours' time will be provided in order to answer all questions and return it. The question will be asked on the basis of 6 points Likert scale, which will help to figure out the in-depth understanding of the participants on AWS and associated impact on retail companies in terms of quality development and profitability generation.

3.5 Ethics

In order to maintain the reliability and validity throughout the data collection process from the selected research population the researcher has abided by the following postulates:

- Focused on achieving the informed consent of the participants
- Maintaining full anonymity and confidentiality towards the responses gathered by the sample population
- Informing the population about the nature and aim of data collection
- Adhering to the provision of Data Protection Act, 2018

3.6 Conclusion

It can be concluded from the above analysis that in order to collect raw data. process reliant information the researcher would rely on a mixed-method complex, consisting of primary qualitative and quantitative data collection and analysis techniques.

Moreover, to maintain the validity and reliability of the study, a phased data collection method will be implemented consisting of surveys, archival and documentation, and collecting primary qualitative data. On the other hand, to answer the framed research questions and satisfy the actionable aims and objectives, the selected pragmatism philosophy and inductive research approach.

Chapter 4: Data Analysis

4.1 Introduction

Data analysis is important in a dissertation because it acts as an imperative that helps in obtaining meaningful insights about the collected data set. This section will focus on the analysis of the primary data collected from interviews of 5 marketing managers of various retail companies of Dublin and a survey of 20 retail employees. Data analysis will include the recognition of a common pattern amongst the responses which will then be assessed to achieve the aim and objective of the study.

4.2 Qualitative research

4.2.1 Results and analysis of the interview data

1. **What is your opinion about AWS in the development of the retail industry as per the gradual shift of customer mindset?**

    - ***R 1:*** "I believe that the implementation of AWS services on a large scale within the Irish retail markets has further assisted business enterprises to effectively decode consumers' purchasing patterns thereby expanding the chances of future profitability.

      Additionally, I think that reliability, flexibility, and costs effectiveness associated with the usage of AWS has further led to the development of retail infrastructure in Ireland."

    - ***R 2:*** "I have been working in the retail industry for quite long and therefore, I know that the rapid changes in the choice of potential customers as well as the pertinent changes within the purchasing patterns, is one of the major challenges faced by the retail enterprise in Ireland. Therefore, according to me the ability of AWS services to decipher the customer behavioral trends would further help in sustaining within the competitive retail landscape for both SME's and large-scale enterprises".

    - ***R 3:*** "I am quite convinced with the attributes of AWS services in relation with its ability to provide improved customer control responsibilities. Moreover, in think with the rapid development of online sales channels AWS services possess greater prospects to sustain customer satisfaction by tracking their purchasing trends".

    - ***R 4:*** "I believe that the use of AWS enterprise and their partners can develop various platforms that help interconnecting various business operations with the organization's infrastructure, thus tracking the ongoing progress on a real-time basis.

Therefore, I think that the use of AWS in the retail business would further assists enterprises to be more competitive and quality-centric".

- ***R 5:*** "Speaking from an overall perspective, I believe that the use of AWS determines the future of the Irish retail market. On the other hand, the use of AWS further helps in the development of multiple testing environments so the mobile applications can be rolled out easily. Using AWS, we can host the application on a platform that is far more extensive as compared to the internal platforms. Perhaps, my concern is how it can be implemented in SMEs, with the prevalence of such pitfalls".

Analysis

All the 5 marketing managers of different retail companies in Dublin have stated that AWS is beneficial in the development of the retail sector based on the gradual shift of the mindset of the customers. The first two respondents believe that incorporation of the AWS services has helped in gaining insights about the purchasing patterns of the customers that in turn is effective in outlining future profitability. The second respondent is of the view that prior knowledge about the customer buying trends would also help both large scales, small and middle-sized retail companies to survive the competition. The other three respondents have also stated the same thing but also added a few more points against the question. The third respondent has said that with the establishment of online sales, AWS has higher perspectives to manage the satisfaction of the customers by tracing the purchasing behaviors.

The fourth respondent has stated that AWS has the ability to make the companies quality centric. On the other hand, the fifth respondent is of the view that through AWS multiple testing environments can be developed with the help of which mobile application can be flattened easily. However, his concern is about the ways through which AWS can be incorporated in SMEs despite challenges. This concern is not shown by the other four respondents with respect to this question.

2. What are the changes you are experiencing in the retail sector after the introduction of AWS?

- ***R 1:*** "One of the major changes that I have experienced after the implementation of AWS services within Irish retail enterprises is the use of S3 and E2C as Simple Storage Services and Elastic Computing Tools. On the other hand, I think that the introduction of AWS services has further led to an increase in revenue generation within retail enterprises".
- ***R 2:*** "I am quite not convinced that the introduction of AWS services has brought in significant changes within the industry, as the use of AWS is further associated with bolstering the technical infrastructure of retail organizations that are already developed. Besides, it also claims that it is affordable but a trade-off between profitability and technological advancement is still a tough choice for a variety of brick and mortar stores".

- ***R 3****:* "According to my observation, workforce efficiency is the primary benefit associated with the use of AWS services within the Irish retail industry. But I think that the prevalence of multiple security breaches and technical flaws must not be ignored as it can lead to a greater loss to the organization"
- ***R 4****:* "As I think that and based on my observations, I think that with the introduction of AWS systems, had improved the organization's abilities to meet with core security as well as statutory compliance requirements which further included, data protection, locality, and lastly, confidentiality regarding the comprehensive services and features. Additionally, the implementation of the AWS system within the organization has also improved the automation of manual security tasks thus, shifting the business focus to adapting innovation and scaling of business activities".
- ***R 5***: "I am quite not sure about the benefits of AWS to an organization. Besides, I do not agree with the use of AWS systems is associated with the prevalence of various security concerns. Apart from that, the implementation of AWS within the organization demands excessive cost".

Analysis

In respect to this question, the 5 respondents have answered as per their knowledge and understanding but have shown different perspectives. The first respondent has only stated the positive changes like the utilisation of elastic computing tools, E2C and S3, and the enhancement of the revenue rate of the retail organisations. The second respondent has highlighted a sense of practicality through his answer. He raised concern about the affordability issue of AWS for several brick and mortar stores.

He also stated that the development of technical infrastructure associated with AWS implementation is not a new concept. The third respondent has reflected both positive and negative aspects of AWS implementation. He is of the view that workforce efficiency is a benefit, but technical flaws and security breaches are also there. Similar to the first respondent, the fourth one has only answered about the positive benefits like improvement of core security and statutory compliance requirements, an increase of business activities. However, the opinion of the fifth respondent is similar to the second and third ones. He has stated security issues and excessive costs related to AWS.

3. What is your opinion about the security of the online platform and database management service provided by AWS?

- ***R 1****:* "I think the lack of accountability as well as abiding by an ineffective security strategy comprising of ineffective tools and control is one of the major security threats associated with the use of AWS services.

Moreover, as far as my knowledge I think that Amazon RDS assists in providing automated patching and backups but is still prone to zero automated performance tuning".

- ***R 2**:* "According to my inferences the AWS database management services provides robust encryption facilities. Furthermore, the encryption facilities are not only limited to the production instance but also expands to encrypting standby nodes, snapshots, backups, and others, besides, it also is effectively integrated with AWS services such as VPN and firewall that simplifies the process of networking".
- ***R 3**:* "I think one of the major highlights of the database management provided by AWS services is its price affordability, on the other hand, I think powerful alerting mechanisms and role- based access controls are also some of the key determinants that help in communicating and addressing critical issues immediately with suitable audiences".
- ***R 4**:* "According to me, AWS services are efficiently categorized into a manner which helps in determining its scope. However, I believe that AWS managed services such as Amazon RDS, and Redshift avails resources to perform specific tasks. However, according to my observation, the effective alerting systems, as well as role-based access controls are some of the major measures to communicate and address the indifferences and malfunctioning of the systems with the potential customer segments".

- ***R 5:*** "I am quite not sure of the use of such services; besides I definitely know that the use of AWS services helps in providing the enterprise with a scalable cloud computing system confining to the high level of dependability and availability, thus analyzing the apparent shifts in consumer mindsets".

Analysis

As per the question, respondents have stated their viewpoint regarding the database management service and online platform furnished by AWS. The first respondent has expressed major security threats like inefficient security strategy, inappropriate tools, and controls that are involved within AWS services. He was also of the opinion that Amazon RDS is efficient in providing backups and automated poaching but susceptible to zero automated performance tuning. The second participant only stated the positive aspects like the encryption facilities provided by the AWS database management service. Likewise, the third one has also affirmed the effectiveness like the role-based access control, a strong alerting mechanism furnished by AWS database management. The opinion of the fourth respondent bears similarity with the viewpoint of the first and the third one. Along with Redshift, he stated about Amazon RDS, role-based access control, and alerting systems and their beneficiaries. The last one was not at all habituated with such services but expressed the positive side like the initiation of cloud computing having a greater level of availability and dependability. He reflected on a different side compared to the other four.

4. What are the issues associated with AWS, that you can identify which are hindering the growth of your retail firm that you had expected?

- ***R 1****:* "According to me the rising share of compliance issues with the implication of AWS services within the retail industry is one of the major hindrances opposing the growth of cloud computing services and its adoption rates within Ireland. Additionally, the ineffective assessment of the elements of Reference Architectures (RA) is also an identified issue which causes irregularities within the inclusive meta-model".
- ***R 2****:* "I think that the compliance issues within the AWS services further possess concerns relating to the execution of flexible operations within the Irish retail industry. On the other hand, the extensive costs associated with the incorporation of individual regulation can further result in additional inconsistencies as well as duplicated efforts".
- ***R 3****:* "According to me the extent of security issues instead of compliance issue is a greater threat towards the implication of AWS services within the retail industry. Denial of Services (DOS) is one of the major security flaws that can further hamper cloud owner's store information and resources subsequently damaging the entire business structure".
- ***R 4****:* "I believe that one of the major issues that might hamper the growth and development in the retail industry is the lack of visibility that discrepant the business processes. On the other hand, I think that as the AWS service limits are set by the platform, therefore, it raises various security concerns that affect the adoption rates of AWS services. Additionally, the high technical fee demanded is also an associated setback".

- ***R 5****:* "Well according to me, one of the major issues associated with the use of AWS systems is the lack of liability and accountability. On the other hand, the recurrence of various compliance loopholes and raising security concerns are other flaws associated with the use of AWS services".

Analysis

Here the question was asked to know about the issues-oriented to AWS. The first, second, third, and fifth respondents, a total of four respondents, have considered compliance issues as a common greater risk of AWS. The first respondent is of the opinion that compliance issues of AWS hinder the emergence and adoption of cloud computing services. He also made a mention of the issues of Reference Architectures responsibilities for the instabilities within the comprehensive meta-model. The second respondent besides the compliance issues has also staged about extensive cost leading to further instability. The third and the fifth respondents, apart from the compliance issues, have mentioned Denial of Services and deficiency of accountability and liability respectively, as important issues associated with AWS. The fourth, on the other hand, stated about different issues like high technical fee, lack of visibility that pose hindrances towards the growth of the retail firms.

5. What are the areas of improvement of AWS which may help in the growth of the retail industry in the future?

- ***R 1:*** "According to my observation, the predominance of compliance and security issues is one of the greater threats associated with the use of AWS services as well as its large-scale implication. Besides, I think that computation and tracking are some of the instrumental functionalities within the retail industry, therefore complications within the billing must be taken into consideration for future improvements".
- ***R 2:*** "Despite the prevalence of multiple operational, tactical and legal irregularities I am quite not convinced that the implementation of AWS services within the retail industry is risk- free".
- ***R 3:*** "For the time being I think that eliminating legal and compliance issues along with operational irregularities is one of the major concerns associated with the use of AWS services and therefore, requires further improvements".
- ***R 4:*** "For the time being I think addressing the recurrent issues in future should the prime focus of AWS systems to boost its adoption rates among retail enterprises".
- ***R 5:*** "I am not sure and convinced about the scope and future development of AWS within the retail industry until the recurrent issues are fixed".

Analysis

In regard to the areas of improvement within AWS, the marketing managers have provided their observations and statements. All of them have made a mention of the spheres of AWS that needs

serious improvements. The first respondent has made a mention of the security and compliance issues, complication at the time of billing, computation, and tracking issues that require improvement. The second and fifth respondents were not convinced properly about the future development of AWS within the retail industry. The fourth one has also stated an exact similar opinion like that of the fifth respondent who stated the need of solving the recurrent issues first. The third one is of the opinion that operational irregularities apart from legal and compliance issues, need improvement.

4.3 Quantitative research

4.3.1 Results and analysis of the survey data

Age group

Age group	*Total number of participants*	*Responses collected*	*Percentage*
25-30	20	5	25
30-35	20	2	10
35-40	20	5	25
40-45	20	6	30
45-50	20	1	5
50 and above	20	1	5

Table 5: Age Group

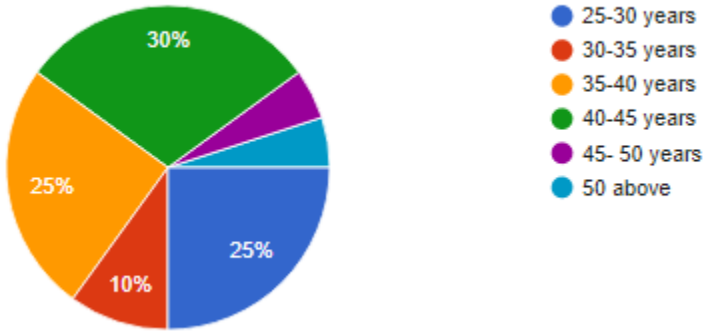

Figure 14: Age Group

The participants were asked about their age group only for the purpose of collecting demographic information. Based on the above table and graph, it is clear that the majority of the participants belong to the age group of 40-45 years. The percentage is 30% for the age group 40-45 years followed by 25% each for 25-30 years and 35-40 years respectively. 10% of the respondents belong to the 30-35 years age group and only 2% belong to the 45-50 and above age group, which is 1% for 45-50 and the rest 1% for 50 years and above.

Gender

Gender	*Total number of participants*	*Responses collected*	*Percentage*
Male	20	13	65
Female	20	7	35
Others	20	0	0
Prefer not to say	20	0	0

Table 6: Gender

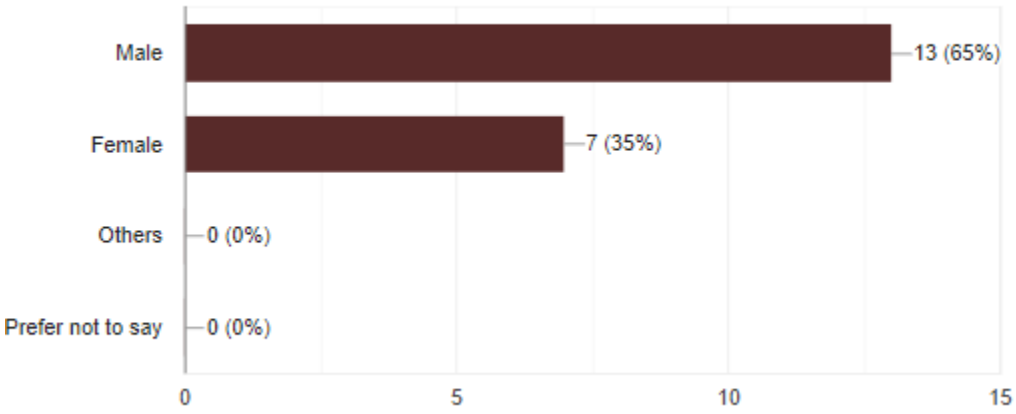

Figure 15: Gender

Question regarding gender was also asked for the same motive, that is, to know about the demographic characteristics. Out of a total of 20 respondents, only 7 were female, that is 35% and 13 were male, calculating 65%. This percentage is evident in the fact that the maximum participants were male. No respondents were there who belonged to other gender or felt unwilling to answer the particular question.

Knowledge about the application of cloud computing

Options	*Total number of participants*	*Responses collected*	*Percentage*
Yes	20	19	95
No	20	1	5
Not applicable	20	0	0

Table 7: Knowledge about the application of cloud computing

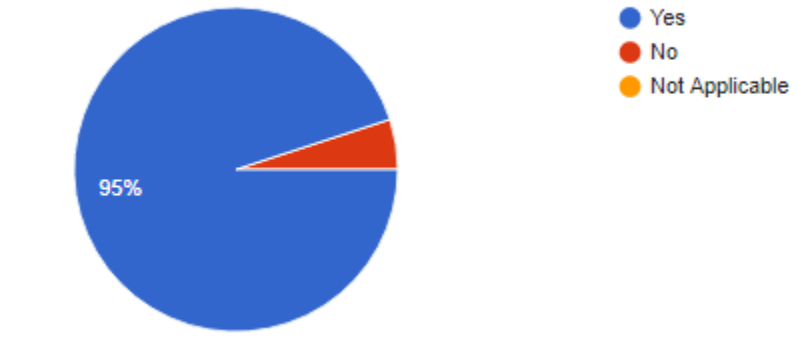

Figure 16: Knowledge about the application of cloud computing

The respondents were asked to state whether they have any knowledge regarding the application of cloud computing. 95% of the respondents have said that they know about the application and 5% did not know about the same. This points to the fact that the majority of the employees possess knowledge about the approach or application of cloud computing

Development of the understanding regarding market trends

Options	*Total number of participants*	*Responses collected*	*Percentage*
Yes	20	16	84.2
No	20	3	15.8
Not applicable	20	1	5

Table 8 understanding regarding market trends

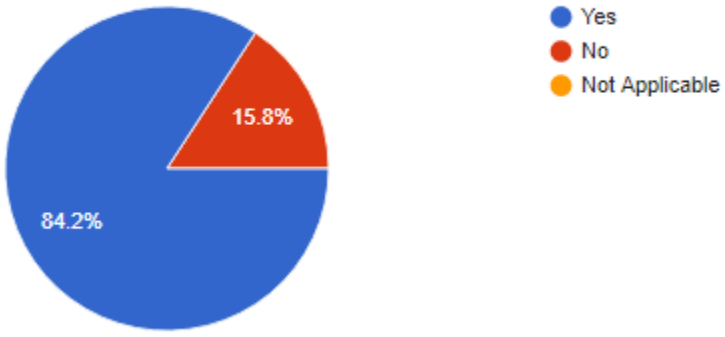

Figure 17 understanding regarding market trends

84.2% of the participants have answered positively with respect to the question posed. They are of the view that data analysis by AWS has improved their understanding of market trends. 15.8% have directly stated no against the question as they are of the opinion that their understanding of the market trends has not improved due to the data analysis by AWS. Out of the 20 responses, only one person has not answered anything and left it blank. From the percentage, it is clear that data analysis by AWS has some contribution in developing the understanding of the market trends.

Expansion of the target market by AWS

Options	Total number of participants	Responses collected	Percentage
Yes	20	17	85
No	20	3	15
Not applicable	20	0	0

Table 9 target market by AWS

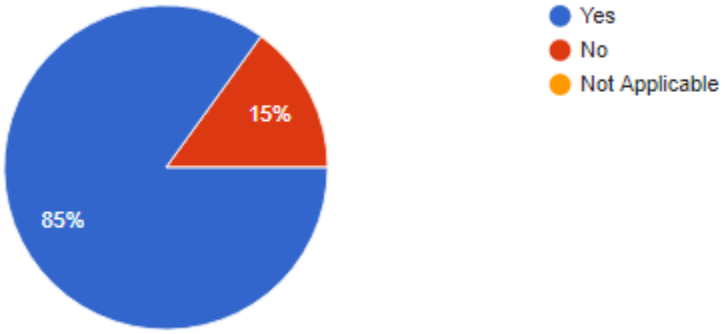

Figure 18 target market by AWS

Here the respondents were asked about their views regarding the effectiveness of AWS in helping organisations to expand their target market. Amongst the total number of participants, 85% of them have answered yes and 15% have answered negatively in response to the question. This indicates that AWS poses a scope to help a firm for extending its target market.

Organisational growth and implementation of AWS service

Options	*Total number of participants*	*Responses collected*	*Percentage*
Never	20	2	10
Rarely	20	1	5
Occasionally	20	0	0
Often	20	6	30
Very often	20	0	0
Every time	20	11	55

Table 10 growth and implementation of AWS service

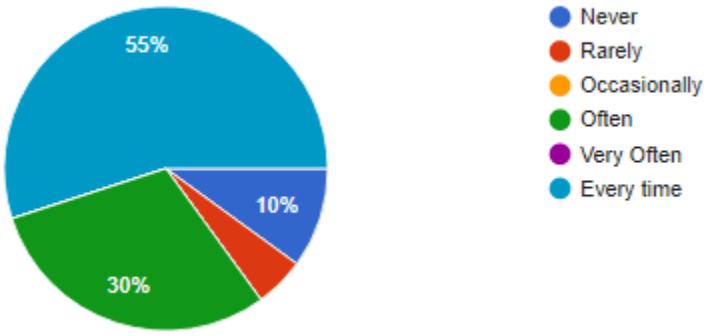

Figure 19 growth and implementation of AWS service

This question was asked to know about the thoughts of the participants regarding the sustainability of organisational the growth by the incorporation of AWS service. 55% of respondents have totally agreed that growth of a company can be sustained by the implementation of AWS services. On the other hand, 10% does not support the fact while 30% stated that often growth can be sustained by the AWS implementation. However, 5% said that it happens but is rare. More than half of the respondents support the fact which makes it clear that the implementation of AWS services can help in sustaining the organisation.

Cost of the implementation of AWS in retail

Options	*Total number of participants*	*Responses collected*	*Percentage*
Highly unlikely	20	2	10
Moderately unlikely	20	2	10
Somewhat unlikely	20	0	0
Somewhat likely	20	4	20
Moderately likely	20	7	35
Highly likely	20	6	30

Table 11 implementation of AWS in retail

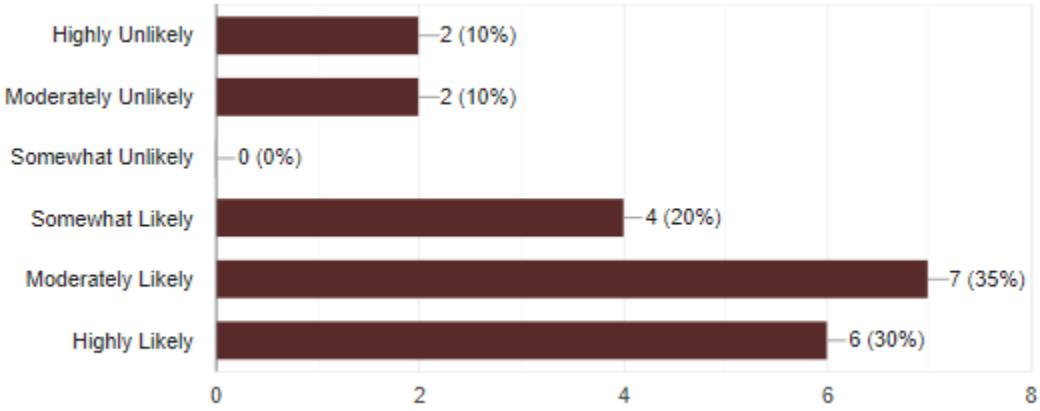

Figure 20 implementation of AWS in retail

The participants here were asked about whether they agree or not that the implementation cost of the AWS in retails is very high or much expensive. 30% have answered that they fully agree that the implementation of AWS service is very expensive, 35% of them moderately agree and 20% somewhat accede to the fact. However, 10% have highly disagreed and again another 10% have moderately disagreed with the notion. 1 participant was there who have provided a tick on both somewhat likely and moderately likely options. The original count was 3 responses for somewhat likely and 6 for moderately likely but because of this 1 for each was increased. Based on these percentages, it has been understood that maximum participants moderately agree that the implementation of AWS is expensive.

Complexity of the application of the AWS services in retail sector

Options	*Total number of participants*	*Responses collected*	*Percentage*
Highly unlikely	*20*	*3*	*15*
Moderately unlikely	20	1	5
Somewhat unlikely	20	3	15
Somewhat likely	20	4	20
Moderately likely	20	7	35
Highly likely	20	2	10

Table 12 Complexity of the application of the AWS services in retail sector

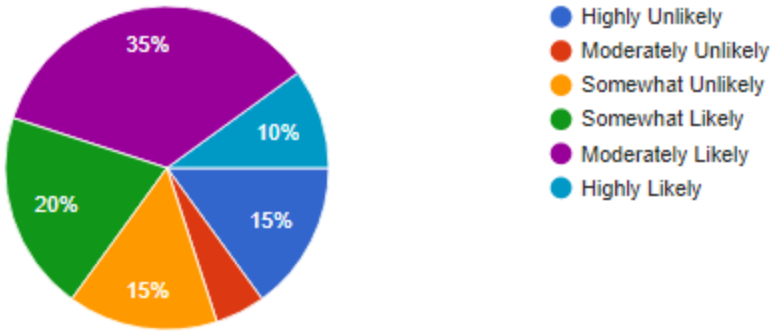

Figure 21 application of the AWS services in retail sector

Based on the table and the graph, it has been found that 10% of the respondents highly agreed, 35% moderately agreed, 20% somewhat agreed, 15% somewhat disagreed, 5% moderately agreed and 10% have shown high unlikability towards the question. These responses indicate that a majority of participants moderately agreed, which means the application of the AWS services is sometimes very complicated to handle.

Association of AWS with myriad difficulties

Options	*Total number of participants*	*Responses collected*	*Percentage*
Highly unlikely	20	3	15
Moderately unlikely	20	1	5
Somewhat unlikely	20	1	5
Somewhat likely	20	2	10
Moderately likely	20	7	35
Highly likely	20	6	30

Table 13 Association of AWS with myriad difficulties

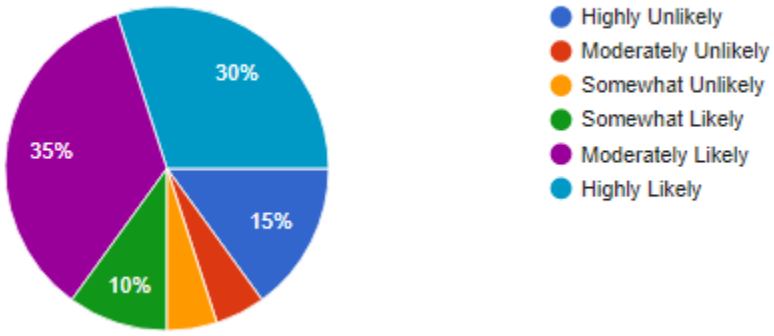

Figure 22 Association of AWS with myriad difficulties

The participants here were asked to state their agreeableness regarding the fact that AWS is associated with numerous difficulties at the time of matching the necessary skills. 30% have shown high unlikability towards the fact and 2% that 1% each have stated that they are moderately and somewhat unlikable against the fact asked through the question.

On the other hand, 35% of the respondents were moderately likable, 10% were somewhat likable and 30% were highly likable about the statement. The percentages show that the majority of respondents agreed that AWS is associated with several difficulties while matching with the essential skills. This indicates that the statement is true and the use of AWS is really associated with myriad problems.

AWS services in building stable and sustainable partnership

Options	*Total number of participants*	*Responses collected*	*Percentage*
Highly unlikely	20	1	5
Moderately unlikely	20	2	10
Somewhat unlikely	20	0	0
Somewhat likely	20	1	5
Moderately likely	20	5	25
Highly likely	20	11	55

Table 14 AWS services in building stable and sustainable partnership

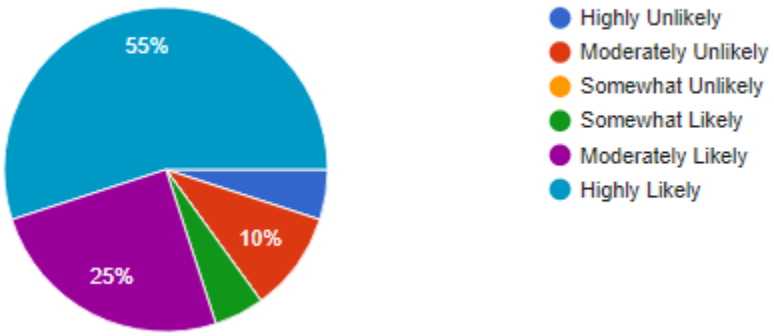

Figure 23 AWS services in building stable and sustainable partnership

On the basis of the table and the graph, it can be seen that few numbers of participants have stated their unlikability towards the fact that AWS services possess the capacity for formulating stable and sustainable partnerships. However, the maximum participant agreed to the same fact. 55%, approximately more than half, highly believe that AWS services can help in building stable and sustainable partnerships. 5% were highly unlikely. The maximum responses towards the fact indicated that AWS has the capacity to build sustainable and stable partnerships.

Need for developing more complex mechanism to secure data within AWS services

Options	*Total number of participants*	*Responses collected*	*Percentage*
Highly unlikely	20	3	15
Moderately unlikely	20	0	0
Somewhat unlikely	20	2	10
Somewhat likely	20	0	0
Moderately likely	20	4	20
Highly likely	20	11	55

Table 15 mechanism to secure data within AWS services

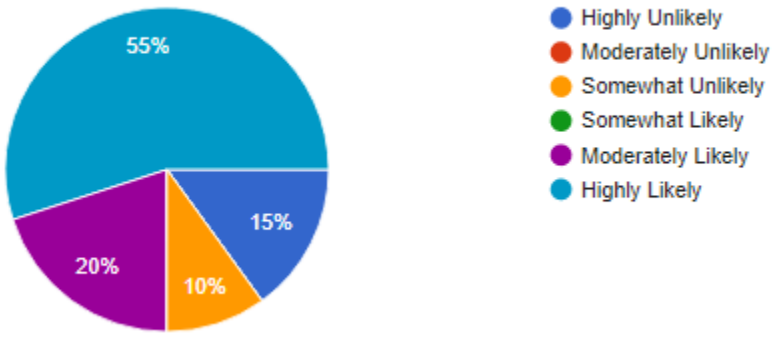

Figure 23 mechanism to secure data within AWS services

Out of a total of 20 participants, 55% highly agreed that there is a need for the development of a complex system to secure data in the AWS services. 20% agreed that there is a moderate need while 15% highly disagreed and 10% have somewhat disagreed. However, no participants have shown any kind of interest in two particular options, that are, somewhat likely and moderately unlikely. The acquired percentages indicate that there exists a serious requirement for developing a more complicated system to secure data within AWS.

Cost-effectiveness of AWS with pay per click billing system

Options	*Total number of participants*	*Responses collected*	*Percentage*
Strongly agree	20	10	50
Moderately agree	20	5	25
Somewhat agree	20	0	0
Somewhat disagree	20	1	5
Moderately disagree	20	1	5
Strongly disagree	20	3	15

Table 16 AWS with pay per click billing system

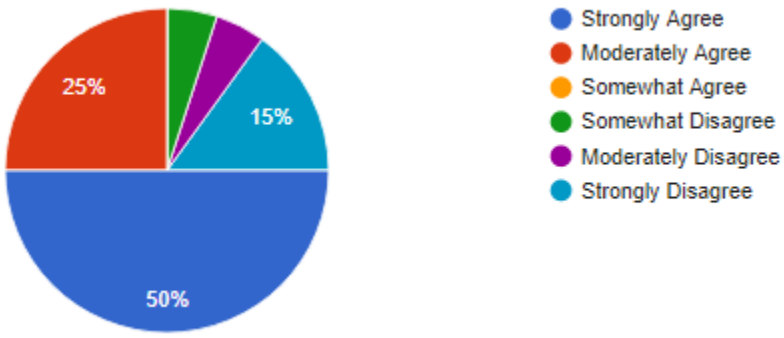

Figure 24 mechanism to secure data within AWS service

This question was asked to know about the cost-effectiveness of AWS with pay per click billing system. It has been found that 15% of the respondents have strongly disagreed whereas 50%, which is half of them, has strongly agreed on the fact. 25% of participants moderately agreed and a total of 2%, that 1% each have shown moderate and somewhat discordances towards the fact. The percentages indicate that the majority have strongly agreed that means AWS is not highly expensive with a pay per click billing system.

4.4 Findings and Discussion

4.4.1 Findings

Based on the data collected from interviews and surveys, it has been found that Amazon cloud service, which is AWS impacts the development of the Irish retail industry. The research study has successfully fulfilled the aim and objectives through the data collection method. A majority of respondents of both the survey and interview have stated about the influence of AWS on the retail industry of Ireland. From the above discussion, it is clear that AWS performs a variety of functions within the retail sector. Those include revenue generation, customer satisfaction, future profitability, increase of business activities, and also helps the retail to become well knowledgeable about the purchasing patterns of the customers. The interview respondents have themselves confirmed about this fact that also acts as evidence of satisfying the objective oriented to the analysis of the usefulness of Amazon cloud service for the Irish retail sector.

Further, the interview and survey data also fulfil the primary objective of the study. With the help of survey data, it has been noted that AWS possesses the capacity to understand market trends which is also imperative for identifying the factors of AWS that are efficient for addressing the buying behaviour of the customers. Moreover, interview data has provided the study with extensive knowledge about the aspects that are effective to satisfy the purchasing conduct of the customers. The 5 marketing managers of the Irish retail sector have stated that AWS services can interpret the buying trends and also have the capability of tracing ongoing procedures based on real-time. These aspects validate the cloud service of Amazon to be efficient for satisfying the buying behaviour of the customers.

The qualitative data also confirms the cloud computing procedures followed by the retail sector of Ireland. The interview respondents have affirmed the use of simple storage services, elastic computing tools, strong technical infrastructure, workforce efficiency, automation of the manual security task, innovation. This has been initiated by the adoption of cloud computing services within the retail segment. The interview data also reflects that legal, compliance, security, instrumental functionalities, operational irregularities, computation and tracking issues as the important areas of AWS that needs improvement. By developing in these areas, AWS can become efficient in providing better services and usability. Moreover, for satisfying the primary research questions, interview and survey participants were asked about the issues that the retail sector faced due to cloud computing. They recognized compliance issues as the most significant challenge of the AWS. Others include excessive cost, denial of service, security breaches.

Based on collected primary information, it is identified that a huge number of people in Ireland have the appropriate knowledge related to Amazon cloud services. Due to the involvement of such knowledge, the retail industry in Ireland gains the maximum profitability. Hence, it is noted that the involvement of cloud services helps a marketer for identifying the preferences of consumers which results in developing the profit margin of a retail organisation. Therefore, it is noted that the majority of respondents deliver positive answers to the marketing trends in the Irish retail industry which relates the scope of influence of Amazon cloud computing services. By the involvement of Amazon cloud services, most retailers can identify the changing marketing trends regarding the retail industry. However, certain numbers of respondents do not prefer to select Amazon cloud services due to the cause of data breaching problems.

It is also identified that retail organisational growth is related to the implementation of AWS services in Ireland. Hence, the maximum population delivers a positive response for introducing the AWS services in the retail business process. From quantitative analysis, it is observed that the financial complexities create multiple problems for an organization for adopting AWS cloud services. As a result of this, multiple retail companies in Ireland failed to identify the changing market trends. Therefore, it is also observed that a certain number of respondents believe that Amazon cloud services are very expensive that creates multiple problems for SMEs. On the other hand, it is also noted that most retail sectors in Ireland do not have the proficient employees for handling cloud computing services. The absence of such skilled individuals generates problems for systematically maintaining the retail business process.

Further, in terms of cloud services mechanism, a huge number of populations deliver highly unlikely behavior which relates to the area of improvement for AWS. Hence, it is observed that the AWS mechanism requires additional costly infrastructure that generates multiple problems for a small retail company.

4.1.2 Discussion

The secondary data has also proven to be beneficial for fulfilling the aim and objectives also for addressing the research questions. AWS is a profitable factor for the retail business because it can eliminate the barriers oriented to workforce management (Moorhead, 2020). With the development of the same, a retail company can acquire huge benefits in the Irish market. The secondary sources also confirm the compliance issues within cloud computing. These need to be sorted out for better performance. In short, it has been understood that Amazon web service is profitable for business evident from the fact that 79% of the customers have acquired a better revenue because of the same (Mukherjee, 2019).

The aforementioned section analyses the necessity of Amazon cloud computing services for generating profitability in the Irish retail industry. In this aspect, multiple respondents deliver the positive answers while some of them provide the negative review due to the financial shortcomings. The Irish retail industry gains rapid enhancement by developing the profit margin with the involvement of cloud computing services. In order to determine the cloud servicing process in Irish retail industry, it is essential to introduce the systematic mechanism and

infrastructure. In this aspect, a huge number of small retail firms are not able to introduce such a mechanism and infrastructure due to the lack of skilled individuals (Lillington, 2014).

On the other hand, it is noted that multiple retail sectors in Ireland incorporate the AWS services which create a resemblance with the primary objective of the study. Based on the primary objective, it is noted that cloud computing services have the efficiency of enhancing consumer buying behaviour. Hence, the involvement of Amazon cloud services delivers better advantages for enhancing the business activities for potential consumers. For instance, the involvement of the Amazon cloud services helps large companies such as Tesco, Dunnes Stores, and Supervalu for delivering online food delivery services. Hence, Amazon cloud services is considered as a marketing strategy that potentially for acquiring 70.8% of the retail market (Retail Planning, 2012). As a result of this, different retail companies able to identify the demands of potential consumers regarding retail products.

Additionally, it is identified that the database management system is one of the essential features of cloud computing services. With the involvement of such a database management system, a retail company can handle the essential consumer information. From the information on findings, it is noted that AWS database management service introduces the role based acess control for developing the potentiality of retail organisation. In order to develop the revenue standard of a retail company, the AWS retail platform introduces the advertisement activities that enhances the consumer engagement.

Moreover, it is noted that the Amazon cloud computing services have multiple obstacles such as the ineffective assessment of Reference Architectures (RA). As stated by Lillington (2014) Irish retail firms lagging the market capacity due to the absence of cloud computing services.

Due to the cause of extensive cost regarding AWS infrastructure, the medium and small retail firms are not able to develop the consumer purchasing intention. As mentioned in the secondary objective, the area of advancement is essential for AWS services for mitigating the problems of the Irish retail industry. Hence, it is noted about the simplification of the AWS mechanism which can deliver better advantages for developing the profit margin. In addition to that, it is also identified about the problems of Denial of Services (DOS) that can hamper the store information of a cloud owner. Deshmukh and Devadkar (2015), stated that DOS has the effectiveness to disrupt the retail service of an organisation that results in decreasing consumer satisfaction. In this aspect, the involvement of skilled technical experts can deliver better advantages for mitigating the problems of DOS. With the introduction of skilled individuals, a retail company can systematically handle business information (Retail Planning, 2012).

Based on the research, it is noted that technical and non-technical improvements are necessary for AWS cloud computing service for developing the potentiality of retail operations. Firstly, it is noted about the computational and billing problems that create multiple problems for a marketer for continuing the retail operations.

Computational and billing are considered as one of the effective measures in the retail industry (Retail Planning, 2012). With the involvement of systematic billing services, a company can enhance consumer purchasing intention. For this matter, a certain number of respondents were

noted for developing the facilities of cloud computing services. However, it is also noted about the operational irregularities create multiple problems for the Irish retail industry for retaining potential consumers. Furthermore, in order to develop a sustainable partnership among different retail organisation it is essential to incorporate the AWS services. By the involvement of such AWS service, a retail company can secure the business information for the purpose of future development.

Chapter 5: Conclusion and Recommendations

5.1 Conclusion

Computational and billing are considered as one of the effective measures in the retail industry (Retail Planning, 2012). With the involvement of systematic billing services, a company can enhance consumer purchasing intention. For this matter, a certain number of respondents were noted for developing the facilities of cloud computing services. However, it is also noted about the operational irregularities create multiple problems for the Irish retail industry for retaining potential consumers. Furthermore, in order to develop a sustainable partnership among different retail organisation it is essential to incorporate the AWS services. By the involvement of such AWS service, a retail company can secure the business information for the purpose of future development.

From the aforementioned study, it is identified about the importance of public cloud software as a service or SaaS. A total of 116bn USD is generated due to the involvement of SaaS services in different organisations in the Irish retail industry. AWS is considered as one of the important cloud platforms that aim to develop the financial standing of the retail industry in Ireland. Apart from that, it is noted that the cloud computing service also has the proficiencies for handling the inventory management activities in a company. Therefore, it is noted that the development of inventory management activities can help a company for improving internal resource capability for a retail operation. On the other hand, it is observed that most small companies in Ireland failed to introduce the AWS cloud platform due to the lack of financial capabilities. Besides, different large retail companies in Ireland are highly influenced by the Amazon cloud services. It is additionally noted that a total of $11.6billion capital was invested in 2018 for developing the financial capability of the Irish retail industry. In this aspect, 64% of organisations accept the cloud computing service for the purpose of the ***economic development of the retail sector of Ireland***.

[H1 is proved]

Based on the aforementioned analysis, it can be stated that 85% of local enterprises are faced with multiple problems for introducing cloud computing services. Due to the absence of an adequate workforce, most of the local companies failed to introduce cloud computing services. As a result of this, those companies are not able to develop the revenue standard and business margin in the Irish market.

Moreover, it is identified that the Amazon S3 cloud service is regarded as one of the effective cloud platforms that can develop the proficiency of a retail company. In recent times, a total of 33% of quarterly revenue is developed in terms of global IT services. Additionally, in the Irish retail marketplace, the demand for Amazon S3 cloud services is developed on a rapid scale. Several renowned companies such as Tesco and Asda noted that the involvement of such cloud services can enhance the consumer purchasing decision. Therefore, in this process, a company can develop the selling percentage and revenue standard in the retail industry. Agility and scalability are noted as strategic measures that enhance inventory management practice in a retail company. By the involvement of inventory management practice, a retail company introduces different innovative services for consumers. It is also noted that the involvement of primary qualitative and quantitative information helps the study for finding the core knowledge regarding cloud computing services. Apart from that the involvement of such a mixed-method also helps in finding the problems related to cloud computing. From the data analysis and findings, it is observed about the necessity of changing the business practice of the Irish retail industry. Besides, it is also noted about introducing adequate and skilled employees for handling the cloud computing services in Ireland.

5.2 Recommendations

The following section defines multiple recommended measures for applying the Amazon cloud services and for developing the profitability of retail companies in Ireland:

The retail industry in Ireland is recommended to introduce a public cloud platform for introducing scalable solutions.

Hence, the involvement of public cloud platform can help a retail company to develop the annual productivity. At the same time, the involvement of software as a service (SaaS) platform supports the management of a company for analysing the essential consumer information. For instance, a company will identify the preferences and reservations of consumers related to targeted products or services. It is recommended to primarily develop the infrastructure and accommodation for introducing the cloud service within a retail company. In this aspect, the involvement of strong shareholders will deliver better advantages for investing adequate capital for developing cloud computing infrastructure in a company. After investing the adequate capital, a retail company can develop the AWS platform for developing the consumer's purchasing intention. The involvement of skilled individuals delivers better advantages for developing the profitability of a retail company. It is advised to the Irish retail industry for introducing additional skilled employees for handling the cloud services. Such a measure also will help a company for finding the demands of potential consumers related to retail business. In this aspect, the involvement of strategic human resource management will deliver better advantages for a retail company for developing the effectiveness of the workers. By the incorporation of HRM professionals, a retail organisation can develop the opportunities for the workers which results in developing the revenue standard. The retail industry is advised to introduce the workload placement analysis for developing the skill margin of different workers. Such a measure also creates multiple opportunities for the workers for developing innovative ideas towards the business. By the involvement of workload placement analysis, a retail company will develop the inventory management process which can develop the revenue standard in the targeted market.

Preventive maintenance of cloud infrastructure is also essential for developing retail management activities. In terms of preventive maintenance, it is advised to a company to introduce the skilled technical experts. With the introduction of skilled technical experts, a company can minimize server downtime for developing the potentiality of the cloud platform. In terms of the AWS cloud, the datacentre infrastructure management process will also create unparalleled visibility towards a network for enhancing the organisation performance.

In order to develop the proficiencies of the Irish retail industry, it is recommended to introduce the datacentre as a service (DCaaS) model for identifying the essential information related to the consumers. After gaining essential information related to consumers, a retail company can introduce innovative products and services.

Through this process, a company can develop annual productivity and revenue standards. Moreover, virtualized software-defined datacentres (SDDCs) are another effective measure that can mitigate the problems of data security. In this aspect, a company can store and analyse the essential business and consumer information. Moreover, the data encryption for both stationary data and in-transit data helps an organisation for protecting critical business information. At the same time, such measures are also used for managing the privacy control process in terms of consumer information. Hence, it is recommended to the Irish retail industry to incorporate the encryption utilities for developing the business effectiveness. For instance, hardware security modules will help different companies in Ireland for using the AWS cloud services and to protect essential information of the business.

The cloud management tooling strategy is considered as another strategic measure that will support the retail industry for adopting the Amazon cloud services. Hence, it is advised to the Irish retail industry is to introduce platform-specific functionality and cross-platform consistency. With the involvement of such strategic measure a retail company can develop the profit margin in the Irish market

5.3 Limitation of the study

The critical limitation of the study is the lack of adequate time for exploring additional information related to the topic of cloud computing. Due to the lack of adequate timeframe, the researcher failed to invite additional respondents' members for the data collection process. Based on the study, it is identified that the researcher able to invite only 20 employees for conducting the survey process. On the other hand, the researcher is not able to introduce adequate questionaries related to the Irish retail industry. Due to the cause of those shortcomings, the researcher failed to identify the recent trends of the Irish retail industry.

5.4 Future scope of the study

Future studies upon the Irish retail industry explores different technological innovations related to Amazon cloud services. With the involvement of such innovative services, different small and medium companies will introduce the cloud computing services for developing the revenue standard in the Irish market. Moreover, the investor and shareholder relationship can be defined as another measure that will deliver multiple facilities for different retail companies in Ireland.

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Appendices

Appendix 1: Interview Questions

1. **What is your opinion about AWS in the development of the retail industry considering the gradual shift of the customer mindset?**

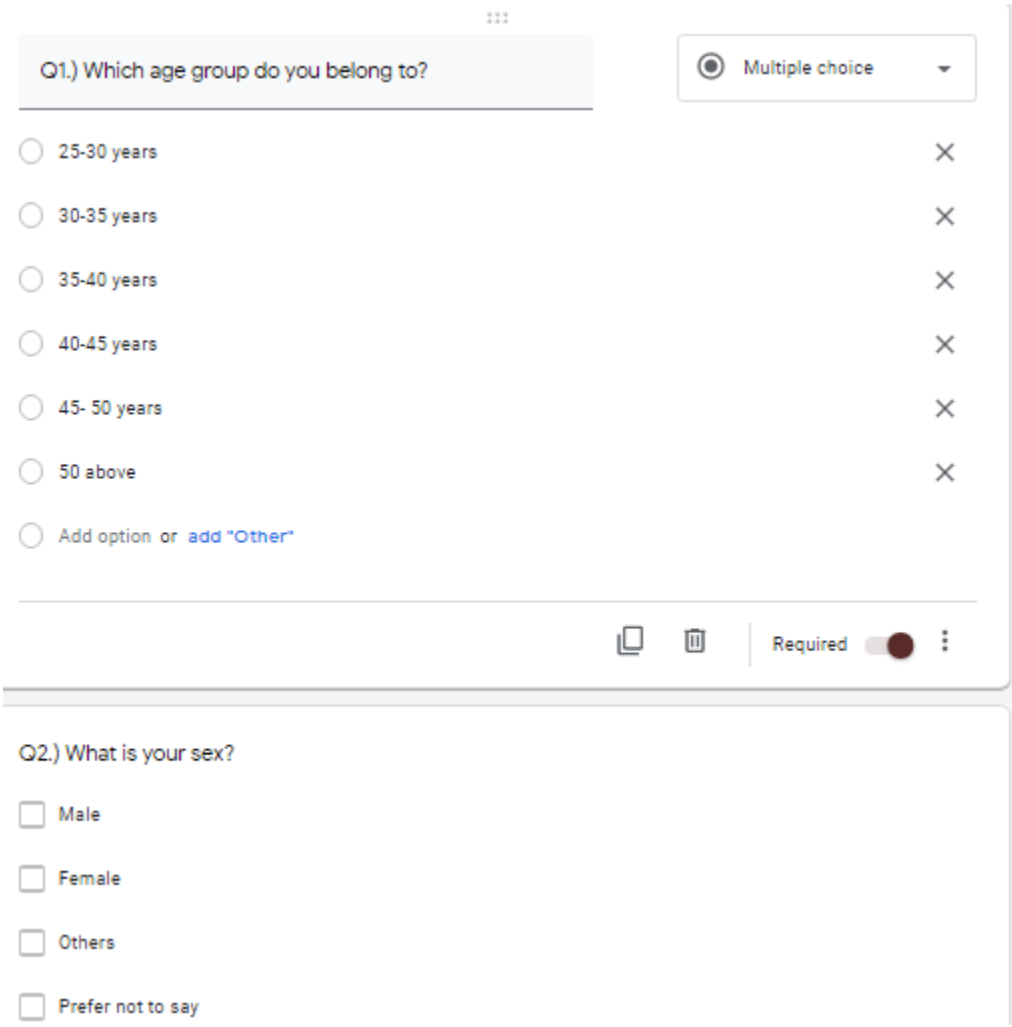
2. **What are the changes you are experiencing in the retail sector after the introduction of AWS?**

3. **What is your opinion about the security of the online platform and database management service provided by AWS?**

4. **What are the issues associated with AWS, that you can identify which are hindering the growth of your retail firm that you had expected?**

5. **What are the areas of improvement of AWS which may help in the growth of the retail industry in the future?**

Appendix 2: Survey Questionnaire



Q3.) Do you know about application of cloud computing?

- Yes
- No
- Not Applicable

Q4.) Do you think data analysis by AWS improved understanding of market trends?

- Yes
- No
- Not Applicable

Q5.) Do you think, AWS is helping your firm to expand target market?

- Yes
- No
- Not Applicable

Q6.) How often do you think that the organizational growth can be sustained by the implementation of the AWS service in the process?

- ○ Never
- ○ Rarely
- ○ Occasionally
- ○ Often
- ○ Very Often
- ○ Every time

Q7.) To what extent do you agree that the implementation of AWS in retail is too expensive?

- ☐ Highly Unlikely
- ☐ Moderately Unlikely
- ☐ Somewhat Unlikely
- ☐ Somewhat Likely
- ☐ Moderately Likely
- ☐ Highly Likely

Q8.) How far do you agree that the application of AWS services in retail sector is too complex to handle?

- Highly Unlikely
- Moderately Unlikely
- Somewhat Unlikely
- Somewhat Likely
- Moderately Likely
- Highly Likely

Q9.) To what extent do you agree that the use of AWS is associated with myriad difficulties while matching the required skills?

- Highly Unlikely
- Moderately Unlikely
- Somewhat Unlikely
- Somewhat Likely
- Moderately Likely
- Highly Likely

Q10.)To what extent do you agree that AWS services helps in building stable and sustainable partnership?

- Highly Unlikely
- Moderately Unlikely
- Somewhat Unlikely
- Somewhat Likely
- Moderately Likely
- Highly Likely

Q11.) How far you agree that there is a need for the developing more complex system to secure data in AWS services?

- Highly Unlikely
- Moderately Unlikely
- Somewhat Unlikely
- Somewhat Likely
- Moderately Likely
- Highly Likely

Q12.) Do you agree that AWS is cost effective with pay per click billing system?

- Strongly Agree
- Moderately Agree
- Somewhat Agree
- Somewhat Disagree
- Moderately Disagree
- Strongly Disagree

Figure 25: Survey questionnaire

Appendix 3: Information and consent sheet

INFORMATION SHEET FOR Participants

Research project title: Impact of Amazon Cloud Service in the Retail Industry of Ireland

Student Researcher: *(Name plus email address)*

Research Supervisor: *(Title Name plus email address)*

About the Project

(Do NOT use technical jargon – description should be suitable for a layperson)

Introduction: E.g. I am a master's student at Dublin Business School, and I am carrying out my thesis project under the direct supervision of _____ on the subject of *Impact of Amazon Cloud Service in the Retail Industry of Ireland.*

Aims:

Primary Aim:

The primary aim of the study is analyse scope of influence of Amazon cloud services in Irish retail industry by exploring the share of benefits and losses in association to the customers purchasing patterns and decisions.

Request/Invitation: I would like to invite you to take part in a (*e.g. survey and interview)*

What would be required? As a participant in the study you would be required to *(e.g. answer questions about, share your experiences/feelings of, carry out a task etc.)*

Data Protection

For questionnaires/experiments/tests: The data you provide as part of this questionnaire/experiment will be fully anonymous. I will not gather any direct personally identifying information about you or anyone close to you. You will be asked to provide optional demographic information of a broad nature about yourself. Your data will be collated into a larger dataset and analyzed at the group rather than the individual level. Your data will only be used for academic purposes and will not be shared with anyone for commercial purposes.

For Interviews: Interviews/Focus groups will be recorded for the sole purpose of facilitating later transcription of the data. Precise transcripts are important in research to ensure that data is recorded accurately, to allow the interviewer to be more present in the conversation and, importantly, to support greater accountability and scientific integrity. During the transcription phase your data will undergo de-identification involving the removal of all personally identifying information thereby rendering them anonymous for retention. The original recordings will be digitized and kept under password protection. Upon graduation all recordings will be permanently deleted. Your data will be used strictly for academic purposes and will not be shared with used or shared with anyone for commercial purposes. The researcher will adhere to strict ethical guidelines and principles and will not anecdotally share any personally identifying information about you with anyone.

What are the risks and benefits of taking part in this study?

In addition to providing much appreciated assistance to the student researcher, the main benefit of taking part in this study will be your contribution to academic research, which aims to expand knowledge and generate new insights. There will be no risks posed to you as a participant in this study, either physical or psychological, beyond that which is normally expected of day-to-day activities.

If you are interested in taking part…

If you are interested in taking part, please review the information provided in the consent form and if you are happy to proceed with the study then please indicate your willingness to take part by ticking the appropriate box / signing your name where appropriate.

You are under no obligation to take part in this study or to provide a reason if you decide not to take part. You may choose not to take part without fear of penalty. If you agree to take part, you have the right to cease participation and withdraw your data at any time for any reason without fear of penalty. The data will not be used by any member of the project team for commercial purposes.

Consent Form

I_____ voluntarily agree to take part in this research study.

I understand that I am not obliged to take part in this study and that my participation in the study is entirely voluntary.

I understand that I am free to withdraw from the study at any time or refuse to answer any question without the need to provide reason and without fear of negative consequences.

Specific to Anonymous Questionnaire I understand that my responses will be anonymous

Specific to Anonymous Questionnaire I understand that in the case of completing an anonymous questionnaire, it will not be possible to subsequently withdraw my data due to the fact that there will be no personally identifying information attached to my responses.

Specific to Interview I understand that digital recordings will be stored under password protection for some time until the approval of their dissertation by the examination board, at which point recordings will be permanently deleted.

Specific to Interview I understand that my data will undergo de-identification during transcription and will be rendered anonymous for retention and for the purpose of subsequent publications.

Specific to Interview I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.

I understand that I will not benefit directly from participating in this research.

I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

I understand that signed consent forms will be retained for some time until the exam board confirms the results of their dissertation.

I confirm that I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study with satisfactory answers provided.

I confirm that I have read and fully understood the information provided and statements above.

Name & Signature of research participant Date

_____ _____

Name & Signature of researcher Date

Appendix 4

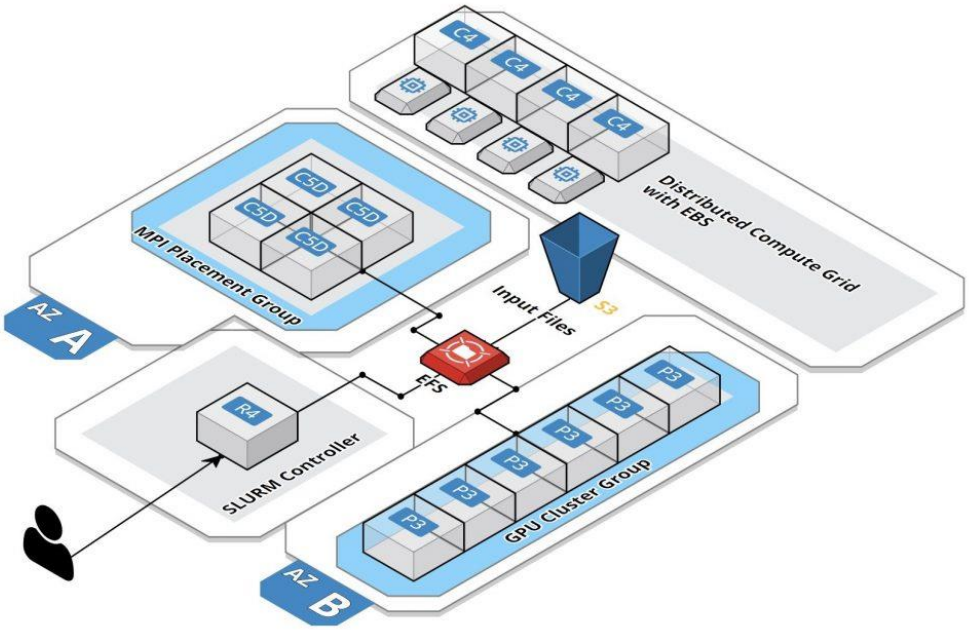


Figure 14: AWS driven high performance computing
(Source: AWS, 2020)

Appendix 5

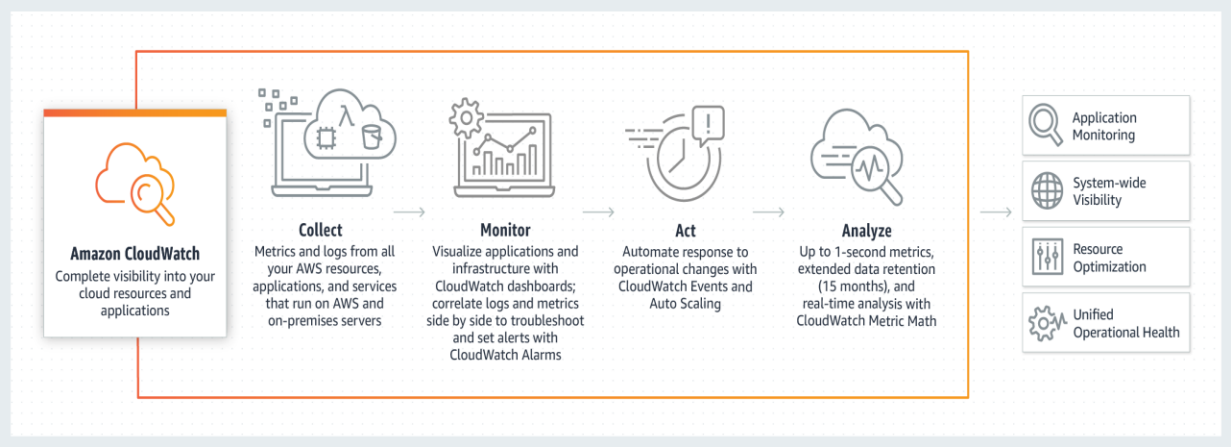


Figure 15: Amazon cloud service in retail service
(Source: AWS, 2020)

Appendix 6

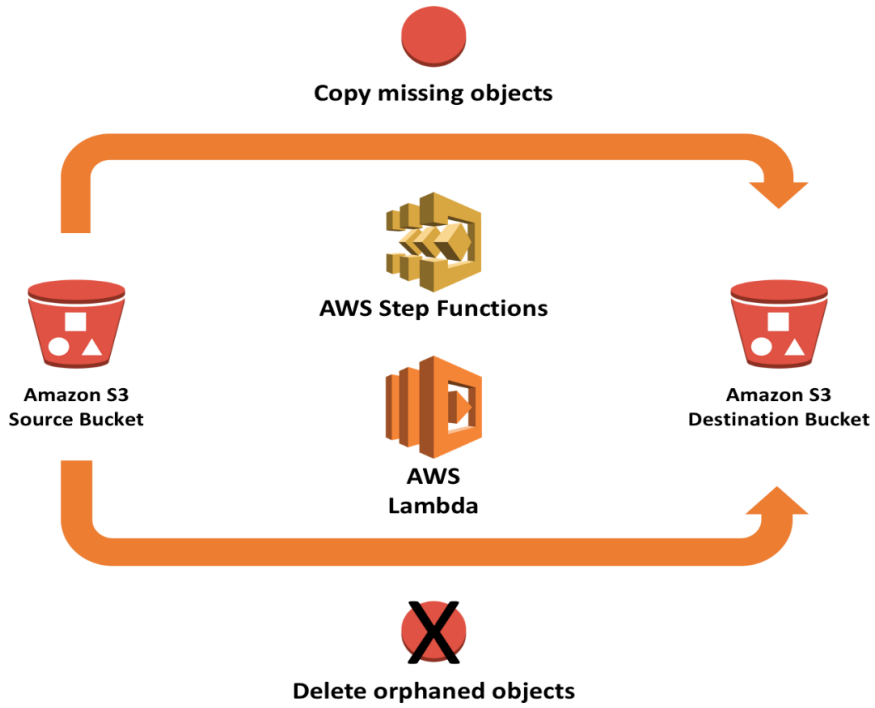


Figure 16: Amazon S3 cloud
(Source: AWS, 2020