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INVESTIGATING THE ROLE OF BIG DATA ANALYTICS IN SELECTED IRISH ORGANISATIONS TOWARDS STRATEGIC DESICIONS

MSc Research Project

Data Analytics

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INVESTIGATING THE ROLE OF BIG DATA ANALYTICS IN SELECTED IRISH ORGANISATIONS TOWARDS STRATEGIC DESICIONS

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Abstract

This research has focused on evaluating the impact of BDA (big data analytics) on strategic decision making of selected Irish firms. The big data analytics plays an important role enhancing the performance level of the corporate firms. To obtain better insights on the impact of the big data analytics on the performance of the firms, some firms of Ireland have been taken into consideration. The impact can be witnessed in terms of enhancement in the annual revenue and profit. This also enables the business organisations to enhance their expenditure on research and development.

The existing solutions to enhance the performance level of the business organisation include enhancement of the marketing strategy and the quality of the product in terms of features. However the needs and preferences of the consumers are not addressed significantly which is why firms must obtain insights to the changing preferences of the consumers, which can be better obtained using the big data analytics and applying them in their day to day business operations.

Some significant industries such as the financial sector, health care sector, manufacturing sector, retail sector and the telecommunication sector of Ireland has been chosen and some of top firms from the sector has been chosen. Financial data such as the annual revenue, annual profit, value of assets and expenditure on research and development has been obtained and presented graphically in order to obtain insights to the impact created by big data analytics on their performance level. This approach is better than the traditional approach in the way that this approach enables to obtain better insights on the performance level. It has been evaluated how BDA impact inventory management, innovation and organisational performances of the chosen Irish firms. There has been use of secondary quantitative data to execute this research. All the quantitative data have been collected from secondary sources such as scholarly articles, reports of selected Irish firms and credible reports. Thematic analysis has been applied to interpret all the quantitative data. The findings have helped in the process of inferring that the influence of BDA is extensive in the decision making process in the different Irish firms. Across varied sectors the changes is observed to be positive from the application of BDA.

Table of Contents

1.Introduction

1.1 Background of the study

Big data analytics (BDA) is one of the most crucial elements for producing insightful information for decision-making. Previous research on its effectiveness in creation of effective information by which an organization can create the most appropriate decision for managing the organization showcases multiple positive impacts of this analytical aspect. Awan *et al.* (2021) mentioned that BDA describes data sets and analytical methods used in applications that are so big and intricate that it needs cutting-edge and special technology for administration, analysis, visualization, and storage. This can be considered to provide a potential background for conducting the research and getting favourable outcomes from the study. The current business landscape is evolving faster due to technological disruptions, growing market competition and changes in regulations. In such a changing business landscape, organisations need to make strategic decisions to survive and thrive. Strategic decision is referred to as choices that align with the mission and long-term goals of businesses (Zakhidov, 2024). There are a couple of processes involved in the strategic decision making of businesses.

First, problems are identified to look for potential solutions. Data is needed to be gathered to come up with the potential solutions. Finally, identified solutions are analysed to select the best one. In the process of gathering data to develop potential solutions to problems, digital technologies play a critical role. In this era of industry 4.0, BDA is a key technology used by brands for strategic decision making. With the use of this technology, it is possible for brands to have data-driven insights. Thestudy has focused on five specific sectors in the form of healthcare, finance, retail, telecommunication, and manufacturing. In the field of healthcare, the ideal companies for the research wereIBM Watson Health, Flatiron Health, Cerner Corporation, Tempus, Health Catalyst, and Prognos. In the case of finance,Flowcast, Demyst, Forge, LoanStreet Inc., Adyen, Upstart, DFIN and were chosen.A total of 32 companies were compared to indicate the implications of BDA in strategically helping a business get better. The core companies focused in the retail sector were identified as Yotpo, AB Tasty, Bluecore, Shein, AnthologyAI, and Da Vinci. In the domain of telecommunication, the major businesses focused remained as T-Mobile, AT&T, Cisco Systems, Verizon, and Ericsson. Within the manufacturing sector, the considered businesses stood asSiemens, Ford Motor Company, 3M, Bosch, Boeing, and General Electric. This gave the research an ample degree of scope to witness the impact of BDA on diverse set of sectors.

1.2 Problem statement

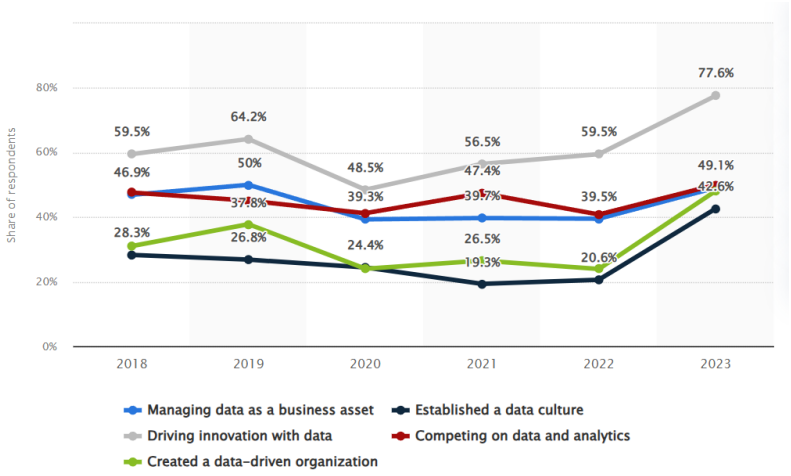

Figure 1: State of big data/AI adoption among firms worldwide 2018-2023
(Source: Taylor, 2024)

According to reports, three-quarters of respondents in the business sector highlighted a significant usage of big data in their business practices (Taylor, 2024). Half of the businesses across the survey report indicated the competitive application of BDA in the business. Business management software market can be considered as a growing and high demand market in Ireland. However, implementation of technology-driven systems in the organizations is reported at a low scale which can be stated as a critical issue. Within 2029, this market sector is anticipated to have grown at a consistent 5.53% annual pace, reaching a market volume of US$79.57 million (Statista, 2024). However, the growth rate can be stated as lower than its related industry especially in Ireland. Lack of knowledge among the organization officials can be stated as a critical issue which is disrupting the adoption of BDA in the organizational culture.

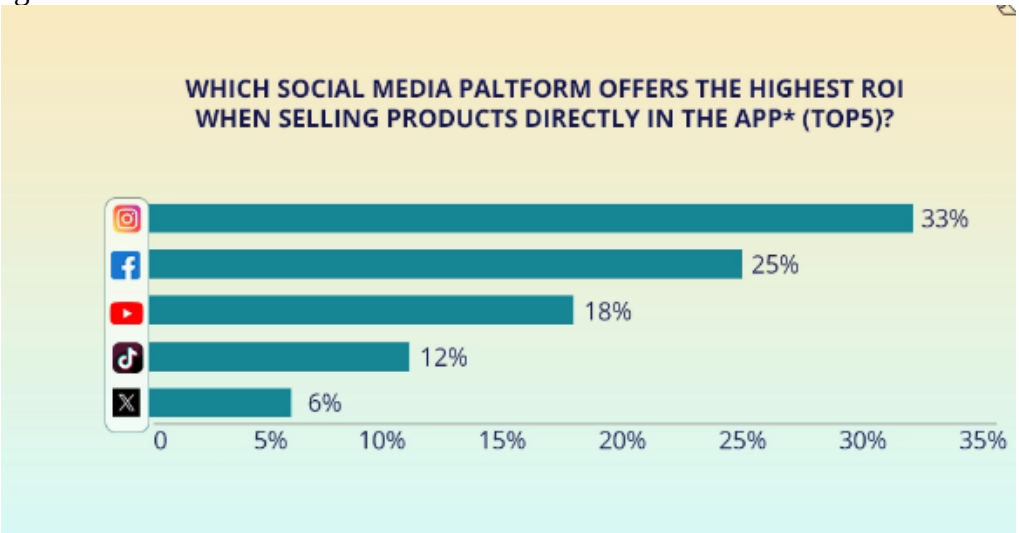

Figure 2: The data creation statistics from the different channel of social media as per Duff, 2023

In this era of digitalisation, businesses irrespective of their industries gather large volumes of data. Customers making online transactions, brands interacting with their customers through social media sites are a few examples of sources that offer numerous data and insights to businesses. As per (Duff, 2023), "53.72% of the global data belongs to these video platforms". Hence, managers and leaders find it challenging to make a decision by analysing such a large volume of data (Tang and Liao, 2021). Also, it may be challenging to maintain accuracy in decisions made by organisational leaders since a lot of aspects need to be evaluated to reach a final decision. In this context, businesses are leaning towards adopting BDA to improve their decision-making process.

In *figure 1*, it has been noticed that BDA is applied by a significant number of organisations for the purpose of developing data-driven organisations. Hence, it is important to investigate how effective BDA is in terms of helping businesses to make strategic decisions. Also, it is important to explore the impact of accepting BDA on organisational culture and leadership styles. This research has focused on highlighting these particular aspects. Furthermore, this research has helped in identifying the effectiveness of BDA in strategic decision making across industries.

1.3 Research questions

- What role BDA is playing in selected Irish organisations' strategic decision-making processes?
- What impact does the use of BDA have on the efficiency, innovation, and competitiveness of strategic decisions in these organizations?
- How companies in the healthcare, finance, retail, telecommunication, and manufacturing sector are using BDA effectively to manage business functions?

- How strategic decisions are made in healthcare, finance, retail, telecommunication, and manufacturing with the application of BDA?

1.4 Aim and objectives

This study is mainly aimed to assess the role of BDA especially in some of the selected firms in Ireland in terms of making strategic decisions in the organizations across healthcare, finance, retail, telecommunication, and manufacturing sectors. Following this aim of the study, the objectives this study are as follows:

- To identify the role of BDA in selected Irish organisations' strategic decision-making processes
- To assess the impact BDA shares on the efficiency, innovation, and competitiveness of strategic decisions in these organizations
- To analyse how healthcare, finance, retail, telecommunication, and manufacturing sector are using BDA effectively to manage business functions
- To evaluate the ways by which strategic decisions are made in healthcare, finance, retail, telecommunication, and manufacturing with the application of BDA

1.5 Significance

The study is based on investigating the effectiveness of the BDA regarding strategic decision making in the Irish firms. This study also provides key insights associated with the application of the BDA in the firm level by which startup firms can generate clear ideology regarding the effective use of the BDA in terms of making most appropriate decisions for organizations. On the other hand, the identified variables also provide a basic idea for using the moderators in associating the decision making at the firm level.

This research is significant since it analyses the usefulness of BDA in strategic decision making across sectors. It can be possible to discover the impact of BDA on organisational culture and leadership with execution of this research. Businesses can receive insights on how they can use BDA for making strategic decisions. Besides, businesses sceptical of the use of BDA may be motivated to accept the technology for improving their strategic decision-making processes.

1.6 Structure of the study

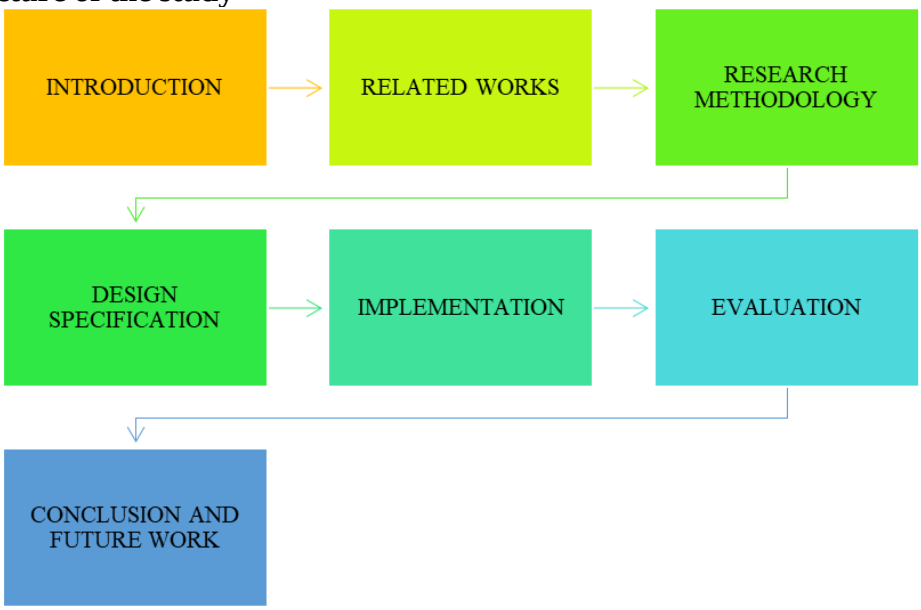

Figure 3: Structure of the study
(Source: Self-developed)

2. Related Work

2.1 Introduction

The focus of this section is to evaluate relevant studies published on the use of BDA by organisations for strategic decision-making processes. In addition to evaluation of studies, relevant theories are also discussed in this section. Moreover, a literature gap is identified after evaluating the chosen studies.

2.2 Defining and conceptualising the concept of BDA

BDA helps in the process of analysing large datasets to decide patterns and correlation between different factors to be used for informed decision making. According to Awan *et al.* (2021), BDA is analytical techniques that are complex in nature and require visualisation technologies and unique storage. With this technology, organisations are able to extract information related to production at different phases of the production cycle. Hence, it is possible to improve resource allocation and enhance production and processes. As opined by Bertello *et al.* (2021), BDA is a holistic approach adopted for managing and processing of data to obtain actionable insights to be used for improving performances while achieving competitive advantage. BDA can contribute to many areas including supply chain practices, decision making and agility. This technology can be applied by businesses for risk assessment. In an uncertain business environment, accurate decisions can be made by brands as they use BDA.

In the opinion of Steiberg and Mizrachi (2022), BDA is considered to be an approach to analyse '5Vs' data related dimensions to receive valuable insights. These '5Vs' are volume, variety, value, velocity and veracity. These Vs are considered to be key dimensions of big data. Petabytes and exabytes are a few of the units in which big data is assessed in this present time. The application of BD helps uncover key information that are needed to make decisions. Volume, one of the Vs refers to the amount of data gathered for analysis Barzizza*et al*. (2023). Variety means diverse sources from where data are gathered while the speed of generating data is called velocity. Veracity suggests errors in data and value means the potential of a data set to offer valuable insights to businesses. There are three analytical methods such as predictive, descriptive and prescriptive used as part of big data analytics.

2.3Application of Big data analytics

The presence of big data analytics (BDA) in the business helps in the process of organising the tasks effectively. Making data-driven decisions in the business becomes easier under the influence of BDA. Several businesses are taking the risk of investing in the idea of BDA because of the leverage it shares in innovating and gaining competitive advantage. Personalised service delivery has become a common theme for the businesses in the present period. The businesses are looking to retrieve customer insights via BDA to secure personalised service offering. The products and services in the businesses are being optimised based on the application of BDA as massive amount of customer data is helping create a better market fit product (Niu *et al.* 2021). There are numerous processes within marketing and sales domain which are positively impacted by BDA. For instance, targeted advertising, and sales forecasting for a business are two aspects under marketing and sales that are covered effectively by BDA. On the other end, the financial analysis for better risk management in the business is also possible with BDA. Multinational companies can detect any kind of fraudulent transactions because of the BDA. Business intelligence of a business improves significantly when BDA is integrated alongside the advanced technological solutions. The competitive intelligence for a business suggests the capacity of the business to analyse the market trends and competitor movements (Ranjan and Foropon, 2021). Therefore, an ample degree of benefits is obtained from the application of BDA in the contemporary business such as improved decision making, cost reduction, enhanced customer experience, and innovation. However, there are some limitations of following BDA

in a business such as data security issues, data quality management, and skill gap in the workforce to cope with the advanced operational measures.

2.4 Role of big data in enhancing organisational performances

Organisations are able to witness improvements in their productivity, innovation and efficiency as they implement BDA. This particular technology is used by brands to acquire competitive advantage in their business (Ramadan *et al.* 2020). In the retail sector, businesses can gain understanding of consumer preferences with the help of BDA. Also, BDA helps brands to manage their inventory as per market demands. It is important for businesses to manage their inventory wisely to reduce their cost operations. Thus, brands can acquire competitive advantage in their business. Furthermore, businesses based on consumer insights can design their marketing campaigns. Brands are able to gather data regarding consumer's preferences through social media platforms. With an analysis of those data, brands can make personalised marketing strategies for consumers (Aljumah*et al.* 2021). There is a positive relation between successful marketing campaigns by brands and their sales. Real time data regarding organisational sales can be accumulated using BDA.

Figure 4: Benefits of BDA

(Source: Developed from Jamarani*et al.* 2024)

BDA helps in improving organisational functioning through predictive maintenance. This technology can make predictions regarding equipment failure, urging management to take necessary steps (Jamarani *et al.* 2024). On top of this, organisational processes can be assessed to identify inefficiencies. Areas of improvements are suggested by BDA to organisations. In the financial sector, BDA is effective in terms of detecting fraud. The process of credit risk assessment also becomes easy with the use of BDA for businesses operating in the financial sector (Burra *et al.* 2024). The ability of this technology to analyse large volumes of transactions in a short period of time is helpful for detecting abnormalities in those transactions. Moreover, it is possible for brands to segment their customers depending on their consumption. The use of analytics helps businesses in assessing credit risk while preventing fraudulent activities.

2.5 Strategic decisions in businesses under the influence of BDA

The companies operate with advanced technological tools, agility and flexibility to meet the requirements of the clients. BDA helps different companies to evolve their business practices and yield better profits. The rate of technology adoption and innovation is increasing rapidly in various sector. Most of the emerging technological trends including BDA is used in the diverse companies as a part of digitally transforming the business with accurate decisions. The rationalised decisions in the business are backed by BDA. This gives the shareholders the confidence to support the business decisions and innovate with merit driven outcomes. The market expansion strategy is a crucial one for the businesses operating in different sector. Hence, these businesses realise the benefit of BDA in securing a better strategic decision for successful market expansion. The security investments and risk management strategies in the business also get adequate boost with the application of BDA (Mariani and Wamba, 2020).

Complying with several of the global business standards becomes easier for a business which follows BDA. A superior cloud infrastructure for a business with BDA gives access to secured data management promotes a scalable business. The sustainability and environmental impact of the business is another major focus area for a business. The presence of BDA gives the scope to optimise the sustainability strategic actions in the business and elevate the long-term goal meeting capacity of a business (Sestino*et al.* 2020). On the other end, the pricing strategies are configured diligently when the business shares access to BDA. Pricing models are run by businesses in the finance, and retail sector to obtain growth and competitive edge. Businesses in the healthcare sector have realised the potential of BDA in dealing with better human resource management as well. Training and recruitment measures are positively impacted by BDA in multinational firms (Al-Shammari *et al.* 2024). Therefore, a lot of the business departments gain better decision-making capacity with BDA. Apart from this, the omni-channel marketing actions are better handled in a business under the influence of BDA. Similarly, the customer experience for a business is dealt in a better way because of the BDA integration in the Irish firms. The vulnerabilities of a market and unpredictable state of operations are also better forecasted as a result of sophisticated BDA solutions in organisations.

2.6 Effects of organisational culture on the adoption of BDA

Organisational culture has an impact on the efficacy of BDA used for making strategic decisions. The effectiveness of BDA in an organisational setting may be either facilitated or hindered by organisational culture. An organisation where there is an openness in terms of innovation and prevailing of data-driven culture, BDA may be adopted and deliver expected outcomes. On the contrary, organisations following traditional methods for decision-making processes may face resistance with the adoption of BDA (Farouk *et al.* 2024). Employees may resist the adoption of such advanced technologies due to organisational culture. However, the adoption of BDA by brands is slow in many sectors following lack of knowledge among people. BDA is a complex technology to handle, requiring certain skill sets (Richly, 2022). Nonetheless, since it is an evolving technology, there is a shortage of skilled workforce to adopt the technology in businesses.

A flexible business which is responsive towards the market changes shares better chances of adopting the application of BDA (Cabrera-Sánchez and Villarejo-Ramos, 2020). The cultural state of an organization influences the decisions to either support or reject the presence of BDA. Higher rate of adoption for BDA is witnessed in those companies where the employees share an organizational culture of collaboration. Opportunities such as brainstorming is possible to access in companies that have a dynamic culture and try to promote innovation (El-Haddadeh*et al.* 2021). Similarly, an organization willing to have a balanced and innovation driven mindset is arguably going to have success with the adoption of BDA. On the other end, the brand which are unwilling to optimise organizational culture could face the challenge of successful BDA application.

2.7 The issue of data privacy and ethical consideration with BDA

A rapid adoption of BDA raises issues with data privacy and other ethical implications for businesses. Brands receive the luxury of gathering data from a variety of sources to make informed business decisions. Customers' data are also accumulated to a large extent by brands as they employ BDA (Zhang *et al.* 2020). Hence, it cannot be ignored that there can be issues related to data privacy of customers. Sensitive data of customers may be stored by brands for analysis to generate insights. Nonetheless, businesses are needed to respect data privacy laws as they use BDA. General Data Protection Regulation (GDPR) is a prominent example of data privacy regulation in Europe (Fadler and Legner, 2022). Businesses operating in the continent are needed to abide by the guidelines mentioned in GDPR. It is required for brands to obtain explicit consent from customers prior to collecting data from

them. Also, there must be anonymity in customers' data and that data must be stored in a secure way.

Bias is another ethical issue that businesses may face with BDA. Inaccurate decisions may occur by BDA in case use of biased data to train algorithms (Liébana-Cabanillas and Blanco-Encomienda, 2024). However, organisations are accepting ethical frameworks as well as governance models to negate the issue of data privacy. There is acceptance of mechanisms related to data auditing to have higher control over customers' personal data. Also, organisations carry out tests on a regular basis to have fairness and accuracy in the algorithms that they use for decision making. Efforts are also there from brands to establish higher transparency in the data processing methods to promote data privacy while making strategic decisions.

2.8 Impact of BDA on innovation and competitive advantage

BDA is considered to be useful for businesses, especially those that operate in volatile environments led by constantly changing consumer preferences. In businesses such as retail and technology, there is a need to drive organisational innovation to sustain competitive advantage. According to Maja and Letaba (2022), with the implementation of BDA, businesses are able to recognise the needs and demands of customers. Based on those identified needs, brands can develop products and service offerings to their customers. Personalised products and services can also be offered by brands to differentiate themselves from their competitors. Finance businesses have started to personalise their service offerings based on the application of BDA (McFall *et al.* 2020). BDA is assisting the financial companies to track data in a more agile manner and use the following data to devise plans across different functions in the business. This includes changing the marketing tactics and optimising the flow of service delivery to the customers. The presence of the financial companies is becoming wide scale as a result of the innovation measures features via BDA in the businesses. The business model of financial brands becomes sustainable as well under the influence of BDA. Businesses operating in the financial domain share competitive advantage when the presence of BDA is comprehensively made (Alrumiah and Hadwan, 2021).Brands using BDA can analyse pricing of their competitors to decide their own pricing. Organisations with such business models rely on data analytics to respond quickly to market changes. It becomes feasible for organisations to respond to opportunities and challenges in the market. The analysis of market scenarios with BDA allows employees to be creative and create innovative solutions to customers' demands. Products and services designed by brands should meet customers' needs to be successful in the market.

2.9 Theoretical underpinning

2.9.1 Theory 1: Resource-based view

Resource-Based View (RBV) theory suggests that a business possesses a set of resources capable of delivering sustainable competitive advantage (Freeman *et al.* 2021). The resources in a business are of two types such as tangible and intangible. The BDA falls in the category of intangible resources as it could act as an intellectual property (IP) for a business in securing better business decisions. Big data could be labelled as a strategic resource which aids in the process of analysing the large volumes of data (Bag *et al.* 2021). Organisations get the ability to make precise and timely decisions with the help of BDA. This data-driven capability to organise large datasets and thereafter use the information to optimise the business functions highlights BDA to be a key strategic source for a business. Shaping the organisational strategic decisions with the help of BDA is considered by many of the multinational firms. However, a significant amount of investment is needed from the financial, human, and technological side to secure comprehensive BDA application. Unless a business invests in the cloud infrastructure, it is hard for it to reap all the benefits offered by

BDA. Firms in Ireland though have a knack of funding projects in the business which offer innovative solutions for better customer dealing, market expansion, and risk management.

2.9.2 Theory 2: Technology acceptance model (TAM)

This model suggests the factors responsible for a new technology or system to be accepted by people in societies. As per this model, perceived usefulness (PU) and perceived ease of use (PEU) are two key factors that influence the adoption of a technology or system in society. The extent to which individuals find it useful to adopt a technology or system is known as PU (Al-Azzam *et al.* 2023). This particular factor is impacted by subjective norm, image and quality of output offered by a system or technology. People are likely to accept a new technology or system that can deliver quality output.

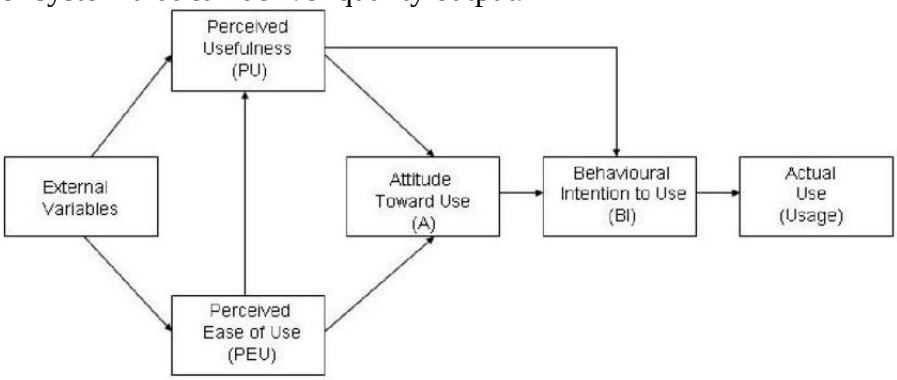

Figure 5: Conceptualising TAM model

(Source: Dehkhodaei*et al.* 2023)

Subjective norm refers to how useful one believes a technology or system to be in daily use. PEU, on the other hand, refers to the extent to which a technology or system is easy to use. It is unlikely that people accept a technology that is difficult to use. In case of a technology complex to use, there may be less users of that technology. This theory is relevant to this topic as BDA is accepted following its effectiveness in strategic decision making. Businesses are implementing this technology and receiving expected results. Nonetheless, it cannot be neglected that it is a difficult technology to operate (Dehkhodaei*et al.* 2023). There is a need for skill sets and abilities to run this technology in organisations. Despite its usefulness, people may develop a negative perception of BDA due to its complexities. Also, an ethical issue such as data privacy is another factor associated with the use of BDA causing the development of negative perception of the technology in the minds of people eyeing to adopt the technology.

2.10 Conceptual framework

Figure 6: Conceptual framework

(Source: Developed from Alrumiah and Hadwan, 2021)

2.11 Literature gap

There is presence of substantial research on the influence of BDA in strategic decision making. However, a particular focus of it in the selected Irish organisations operating in Ireland is limited. The regulations, and the market environment in Ireland demands firms to implement BDA solutions for better strategic decision formation. On the other end, lack of empirical evidences related to this makes it challenging to state that BDA is massively responsible for the strategic decisions finalised in the firms in Ireland. The presence of BDA is helping the businesses globally make better decisions across the different business functions which promote the scope to address the literature gap existing in the current study.

2.12 Chapter summary

This particular section concludes that BDA helps businesses across sectors with their strategic decision making. Brands are able to gather and analyse large volumes of data to produce actionable insights. Market changes led by customers' preferences are detected with the use of BDA. Hence, businesses can offer personalised products and services to their customers. It has also been found that businesses can develop competitive advantage as they recognise customers; needs and adapt accordingly. Organisational culture has an influence on the adoption of BDA. An organisational culture denoted by openness and creativity may facilitate the adoption of the technology. Organisational leaders also have an important role to play in facilitating the adoption of the BDA. Nonetheless, data privacy is a concern associated with the application of BDA. Furthermore, there are concerns of having biased decisions using BDA in businesses, though businesses are adopting ethical frameworks to address such concerns.

3. Research Methodology

3.1 **Introduction**

Research methodology refers to the methods that are applied to execute research. This involves research philosophy, research design, method for data collection and techniques to analyse data. In this section, the methods followed to execute this research are depicted. Also, there are justifications offered for the selection of each element of the research method. Methodological paradigms are valuable for researcher to identify research paths and follow paths with the methodology. Research methodological paradigm helps researcher to understand study patterns and processes. "Philosophy", "approach", "design", "data collection", and "data analysis" methods allow researcher to complete thesis within a given deadline.

3.2 Research philosophy

Research philosophy works as a guide for researchers with their data collection and data analysis procedures. There are different forms of research philosophies such as interpretivism, positivism, realism, and pragmatism (Park *et al.* 2020). Among these, the most structured research philosophy is positivism as statistical data analysis is done following it. However, flexible and unstructured research philosophy is the interpretivism one.

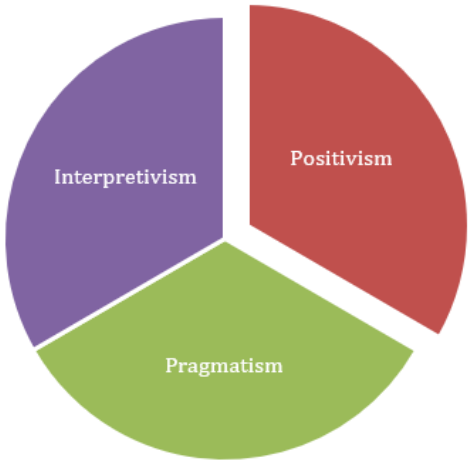

Figure 7: Chosen research philosophy

(Source: Developed from Alharahsheh and Pius, 2020)

Positivism research philosophy aids in both qualitative and quantitative research work (Alharahsheh and Pius, 2020). Philosophy is the best methodological paradigm to manage suitable research processes. Pragmatism is another research philosophy in which researchers are allowed to use both numerical and non-numerical data. Hence, it is possible to generate a measurable outcome along with a detailed knowledge regarding the topic.

In this research, there has been use of "positivism philosophy" since it helps to assume objective reality, social construction, and physical phenomena with big data analytics and strategic decisions in Ireland's businesses belonging to diverse sectors. With the use of positivism research philosophy, it has been possible to have measurable outcomes on to what extent BDA can influence strategic decision making for Irish firms. Interpretivism research philosophy has not been followed since there has been any requirement to produce in-depth findings on the research topic.

3.3 Research approach

Research approaches are considered as detailed guidelines for researchers with their data collection and analysis process.A method with developing theories and hypotheses is associated with a research approach. Inductive, deductive and abductive are common research approaches used by researchers. In an inductive research approach, new theories are established from observations. An inductive approach is followed from the end of the researcher and it helps to start a study with an observation. Inductive Content Analysis (ICA) is associated with a qualitative method and it helps to achieve technical information about big data analytics and strategic decisions in Ireland's firms (Vears and Gillam, 2022). The method is valuable for researchers to align theory with the subject matter. Bottom-up thinking about subject matter is upgraded through the usage of inductive approach and it is the best methodological paradigm for thesis.

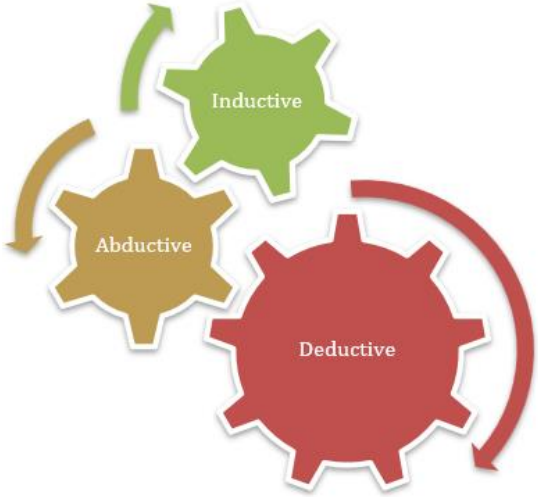

Figure 8: Chosen research approach

(Source: Developed from Casula *et al.* 2021)

Deductive research approach is suitable for testing existing theories. This research approach facilitates quantitative data analysis. Also, a structured and systematic approach is followed as deductive research approaches are applied (Casula *et al.* 2021). With the application of deductive research approaches, it is possible to obtain measurable outcomes in research. In the abductive research approach, researchers are permitted to apply the strengths of both inductive and deductive research approaches. Hence, researchers can gather both qualitative and quantitative data as per the requirement of their research. However, in this research, there has been use of deductive research approach to generate measurable outcomes regarding the effectiveness of BDA on strategic decision making for selected Irish firms operating different industries.

3.4 Research design

Research design refers to the strategy that researchers deploy to execute theory research. Research design helps researchers to investigate patterns and trends in the dataset. Validated instruments and data accuracy patterns allow researchers to grab high-quality data from different sources. Exploratory and explanatory are two key research designs used by researchers. In exploratory research design, researchers receive flexibility with their data collection process (Makri and Neely, 2021). Since researchers receive flexibility with exploratory research design, the research process is unstructured. In addition to this, the findings generated using explanatory research design is tentative. “Explanatory sequential design” is valuable for researchers to follow the qualitative phase (Toyon, 2021). It helps to achieve positive outcomes from study with big data analytics and strategic decision making.

In explanatory research design, researchers are needed to follow structured methods for data collection and analysis. There is lack of flexibility for researchers with their data collection process as they apply explanatory research design. However, findings generated using explanatory research design is conclusive (Toyon, 2021). Nonetheless, in this research, there has been application of exploratory research design to receive flexibility with the data collection process. The focus in this research is to evaluate the effectiveness of BDA in strategic decision making for selected Irish brands belonging to diverse sectors. Therefore, it is needless to explain that it has been essential to access data from a variety of sources to receive outcomes. Thus, exploratory research design has been suitable in this research.

3.5 Data collection and data analysis

Data collection is one of the important aspects of research methodology. It denotes the collection of data from authentic sources to receive desirable results. Data are classified as primary and secondary based on their sources. Primary data collected by researchers through

field research. For example, surveys and interviews are often used as instruments by researchers to gather data from primary sources. These types of data are considered to be highly reliable, though the process of gathering such data is expensive and time-consuming (Karunarathna *et al*. 2024). On the other hand, researchers gathering data through carrying out library research is known as secondary data. These types of data are easy to gather as researchers do not need to do field work to obtain secondary data.

In this research, quantitative data have been gathered from secondary sources. It might be a difficult job to have access to the selected Irish firms to gather data regarding the use of BDA. Also, such a procedure might be time-consuming and expensive as well. Hence, quantitative data from secondary sources have been collected in this research. Data collection is a major segment for a study to achieve valid and authentic data about data analytics and big data in Ireland's diverse sectors. Secondary data are collected from the end of researchers in study from governmental websites, Google scholars, newspapers, and company's websites. Data from secondary sources about the thesis plays a significant role to provide valuable insights and information about strategic decisions, and big data analytics in diverse companies of Ireland.

3.6 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
● Secondary quantitative data published within the last five years have been included in this research. In other words, quantitative data published since 2020 have been considered, including annual reports. ● There has been use of keywords for the selection of secondary studies in this research. Secondary quantitative data with keywords such as "big data analytics", "strategic decision making", "Irish brands" are included in this research. ● It has been ensured that all the gathered secondary quantitative data are published in the English language. ● Secondary quantitative data published by authentic sources have been included in this research.	● Secondary quantitative data published before the last five years have been excluded in this research. In other words, quantitative data published before 2020 have not been considered. ● There has been use of keywords for the selection of secondary studies in this research. Secondary quantitative data missing keywords such as "big data analytics", "strategic decision making", "Irish brands" are excluded in this research. ● It has been ensured that no secondary quantitative data are published in languages other than the English language. ● Secondary quantitative data published by unauthentic sources have been excluded in this research.

Table 1: Inclusion and exclusion criteria

3.7 Data analysis

Data analysis is another important aspect of research methods. Researchers need to analyse gathered data to produce outcomes in their research. Secondary qualitative data has been collected from the end of research in this thesis and collected data interpreted through thematic analysis. Themes are made based on research objectives and collected secondary qualitative data in study. Thematic analysis allows researchers to focus on structured qualitative data from different secondary sources (Lochmiller, 2021). Websites of Ireland' various companies in five of the sectors are used as a source of secondary data in study and it helps to enrich the quality of study. There are a few steps followed to analyse data with the help of the thematic analysis framework. These are familiarisation with the gathered data,

generating initial codes, searching for themes, reviewing and defining themes and writing up of themes. First, researchers focus on being familiar with their gathered data. Then they focus on generating initial codes from the data. After that themes are searched and reviewed. Finally, themes are defined and written up. All these steps have been followed to conduct thematic analysis in this research. Secondary data sources such as annual reports were focused with extensive measures to analyse the themes for the respective 5 sectors, and 32 case companies, namely healthcare sector, financial sector, manufacturing sector and retail sector.

3.9 Validity and reliability

It is essential for researchers to ensure that all the gathered data are valid and reliable. In case of issues with the validity and reliability of gathered data, outcomes of a research may not receive acceptance in the public domain. All the secondary quantitative data have been collected from valid and authentic sources in this research. Valid and authentic data are included in study and blogs information and data are excluded from study. Thematic analysis followed by researcher and content analysis is rejected from the thesis. Researchers follow study ethics through gathering secondary qualitative data. It helps researchers to finish study within a given deadline.

3.10 Chapter summary

This chapter concludes that secondary quantitative data have been gathered in this research to analyse the impact of BDA on the strategic decision-making process of a few selected Irish firms from diverse industries. As part of the secondary quantitative method, data have been collected from various reports, corporate websites of the selected Irish brands and scholarly articles. All the collected secondary quantitative data have been evaluated using thematic analysis framework.

4. Design Specification

The design specification outlines the requirements, strategy and techniques for analysing and collecting secondary qualitative data to investigate the impact of big data analytics on the strategic decisions of the various companies of Ireland. This approach allows thematic analysis to extract a meaningful insight from the existing sources of data. Secondary data allows to provision of a broad range of information about the research question variable it involves gathering information from existing sources (Ganesha and Aithal, 2022). Peer-reviewed conference papers, case studies and journal articles focus on big data analytics and decision-making of the various companies. Strategic documents, internal reports and white papers of various companies who are operating in Ireland contribute to offering insights into the process of decision-making. Published reports through market research firms, government agencies and consulting organisations that explore the trends of big data analytics. Relevant news articles, interviews and blogs with the executives or industry leaders discuss role of big data analytics.

Thematic analysis is chosen for its capability and flexibility for uncovering the theme and pattern. In addition to data analysis, a thematic analysis process will be used to generate themes based on the identified code from the data collected through secondary sources. Key phrases and concepts are coded and identified systematically. For instance, recurring references to “predictive analytics” or “data-driven decision-making” for tagged as the relevant themes. Thematic analysis and code play an impactful role as it is from the individual coded segment that the researcher identifies the pattern. Codes are applied to a sentence, single word, visualised portion or paragraph of qualitative data (Lochmiller, 2021). Research adopts the framework to centred understanding of the relationship between strategic decision-making and big data analytics. Through leveraging the existing knowledge from the credible sources, research gives a robust foundation to understanding how the “big data analytics” can help to shape the strategic decisions in the Ireland's various companies.

5. Implementation

5.1 Codes for thematic analysis

Variable	Theme	Code
Big Data Analytics	Data Processing	Data cleaning, data integration, data mining
	Data Visualisation	Dashboards, visual reports, graphs
	Data Insights	Descriptive analytics, trend identification
	Data Storage & Management	Big Data infrastructure, cloud storage
	Real-time Analysis	Streaming data, real-time decision making
Strategic Decisions	Decision-Making Process	Rational decision-making, leadership
	Organizational Strategy	Long-term goals, competitive advantage
	Data-Driven Decisions	Evidence-based decisions, data utilization
	Risk Assessment	Scenario analysis, risk tolerance
	Innovation & Adaptability	Dynamic strategy, adapting to market changes
Predictive Analytics	Forecasting Trends	Predictive models, future insights
	Predictive Models	Regression, classification, time series

	Data Quality	Accuracy of predictions, data integrity
	Machine Learning	Algorithm development, model training
	Performance Metrics	KPIs, evaluation of model effectiveness
Technological Resources	IT Infrastructure	Servers, cloud services, network resources
	Software Tools	Analytics platforms, visualization tools
	Automation	Robotic process automation, AI applications
	Cybersecurity	Data protection, security protocols
	Innovation in Technology	Emerging technologies, AI, IoT
Risk Management	Risk Identification	Risk assessment tools, potential threats
	Risk Mitigation	Preventive measures, contingency plans
	Compliance & Legal Risks	Regulatory compliance, legal frameworks
	Financial Risk	Market volatility, investment risk
	Operational Risk	Process inefficiency, resource misallocation

5.2 Formation of themes

Theme	Related Variables	Description
Data-Driven Decision-Making	Predictive Analytics, Big Data Analytics	How data predictions and analytics influence the organisational decision-making process and their strategies.
Strategic Planning and Execution	Risk Management, Strategic Decisions	Implementation and formulation of the strategies to achieve the goals, considering uncertainties and risk factors.
Technological Enablement	Technological Resources, Big Data Analytics	Use of technology like “infrastructure, software, AI” to enhance the decision-making process and support data analysis.
Predictive Insights for Proactive Decision Making	Predictive Analytics, Strategic Decisions	Using a predictive model to make proactive strategic decisions and foresee future trends.
Risk and Uncertainty Management	Risk Management, Strategic Decisions	Mitigating and identifying the risks, to ensure that the strategic decisions are resilient to uncertainty.

6. Evaluation

The purpose of this section is to provide a comprehensive analysis of the results and main findings of the study as well as the implications of these finding both from academic and practitioner perspective are presented. Only the most relevant results that support your research question and objectives shall be presented. Provide an in-depth and rigorous analysis of the results. Statistical tools should be used to critically evaluate and assess the experimental research outputs and levels of significance. Use visual aids such as graphs, charts, plots and so on to show the results.

6.1 Experiment on the healthcare sector

6.1.1 Data-Driven Decision-Making in Operational Dynamic

Big data analytics is growing and also become important in decision-making and operational efficiency within the organisation. The predictive maintenance in the process of decision-making influences the phase which gets triggered through real-time prediction and data-driven dynamics to generate a recommendation about mitigate of plans and actions to mitigate the risk factor (Bousdekis*et al.* 2021). Through leveraging the innovation dynamic algorithm, the banking sector can focus on ensuring fast lea processing while minimising the risk factor more efficiently. The fraud detection tools in the operational dynamic also help to analyse the transaction histories within a fraction of the time, preventing fraudulent activities and identifying anomalies before they get harmful. IBM Watson Health, Flatiron Health, Cerner Corporation, Tempus, Health Catalyst, and Prognoswitnessed high level of influence of big data. The continual investments of these brands in BDA have proven to be effective in making decisions faster.

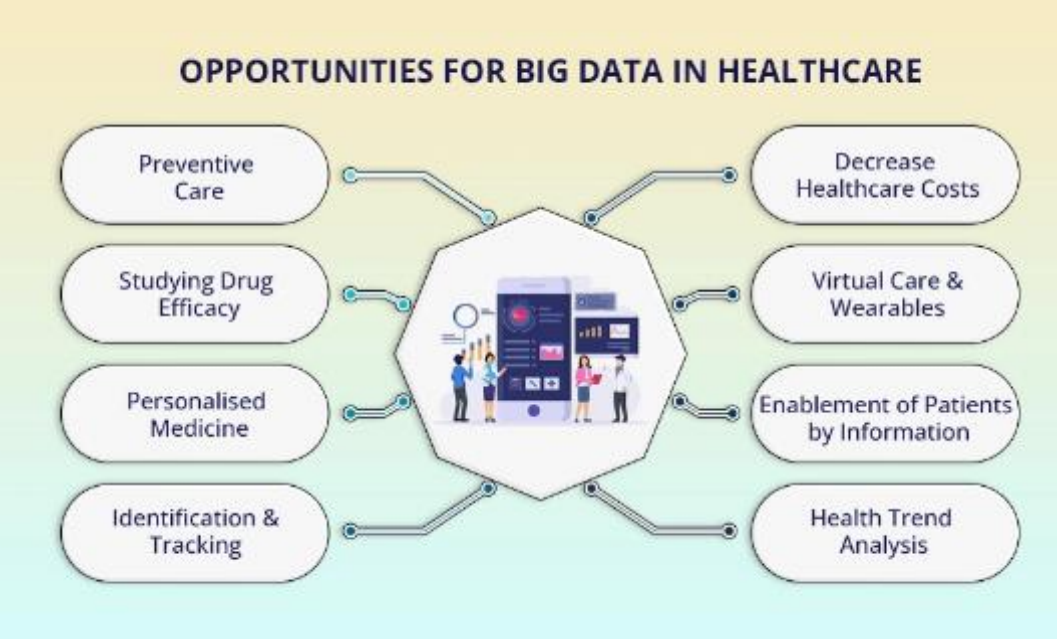

Figure 9: Big data opportunities in healthcare

(Source: Duff, 2023)

Risk-informed the process of decision-making has been applied for many years in different fields, and risk insight's role in safety considerably depends on the calculations and conversion times of the solution (Parhizkar*et al.* 2020). Retail and supply chain management also benefit immensely from data-driven operations. These data-driven tools also help the sector through analysing the emerging trend of consumer needs to be met without any form of delay. "The international market of big data was worth $271.83 billion in 2022 (Duff, 2023)." Within the surge of e-commerce, as per Gutierrez-Franco *et al.* (2021), the real-time tracking data allows the company to adjust the operations improve the customer satisfaction dynamic and ensure a timely delivery.

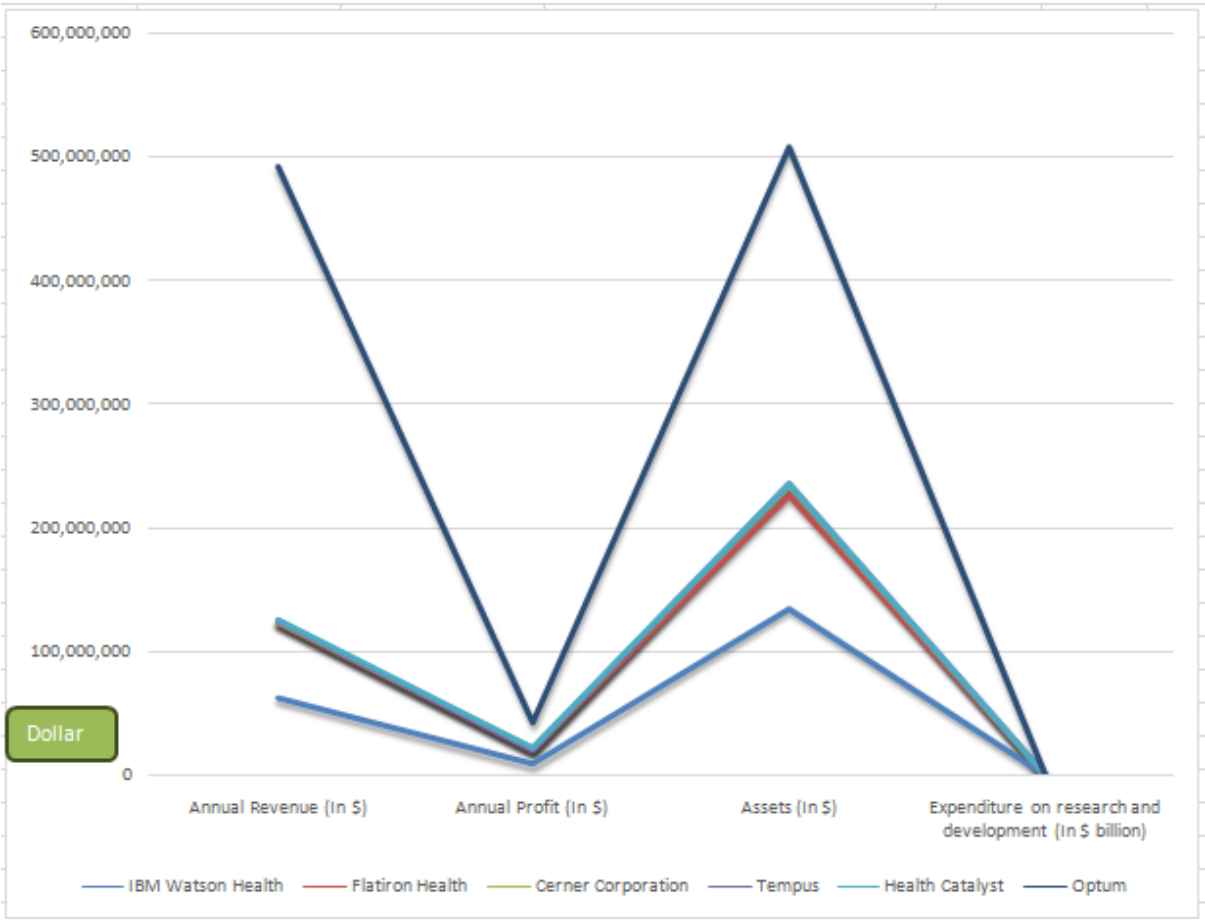

Figure 10: Performance analysis of the firms in the healthcare sector

(Source: Developed via MS-Excel)

The performance level of the firms present in the healthcare sector of the Ireland has been found to be fluctuating among the firms. Firms such as IBM Watson health and Flatrion Health have high revenue in comparison to the other firms of the healthcare sector such as Tempus, Health Catalyst and Optum. This outlines the effectiveness of the implementation process of big data analytics which has enables the first two organisations to enhance the annual revenue and profit. The firms have also been able to enhance their expenditure on research and development. Big data analytics is successful and the implementation of this model enhances the operation process of the business organisation.

6.2 Experiment on the financial sector

6.2.1 Strategic Planning and Execution in the Innovation Support System

Strategic innovation and planning are crucial for organisations as it is to focus on competitive advantage and sustain growth. Different sectors can use big data analytics to drive the innovational dynamic within their strategic planning and product development. The data-driven appearance is always helpful to position the most innovative solution and help the diverse sector to anticipate the market demand and regulator changes. Nowadays businesses are openly taking leverage of the "AIS-driven insights stemming from massive real-time data streams" to ensure a better decision-making process and inform the core strategic imperatives (Narneg*et al.* 2024). Through analysing, the behaviour of the consumer, banking can easily identify the gap in the services and also easily access a digital solution like the application of

mobile banking and AI-driven chatbots.In the field offinance, Flowcast, Demyst, Forge, LoanStreet Inc., Adyen, Upstart, and DFIN realised moderate to high positive influenceofintegratingBDA.

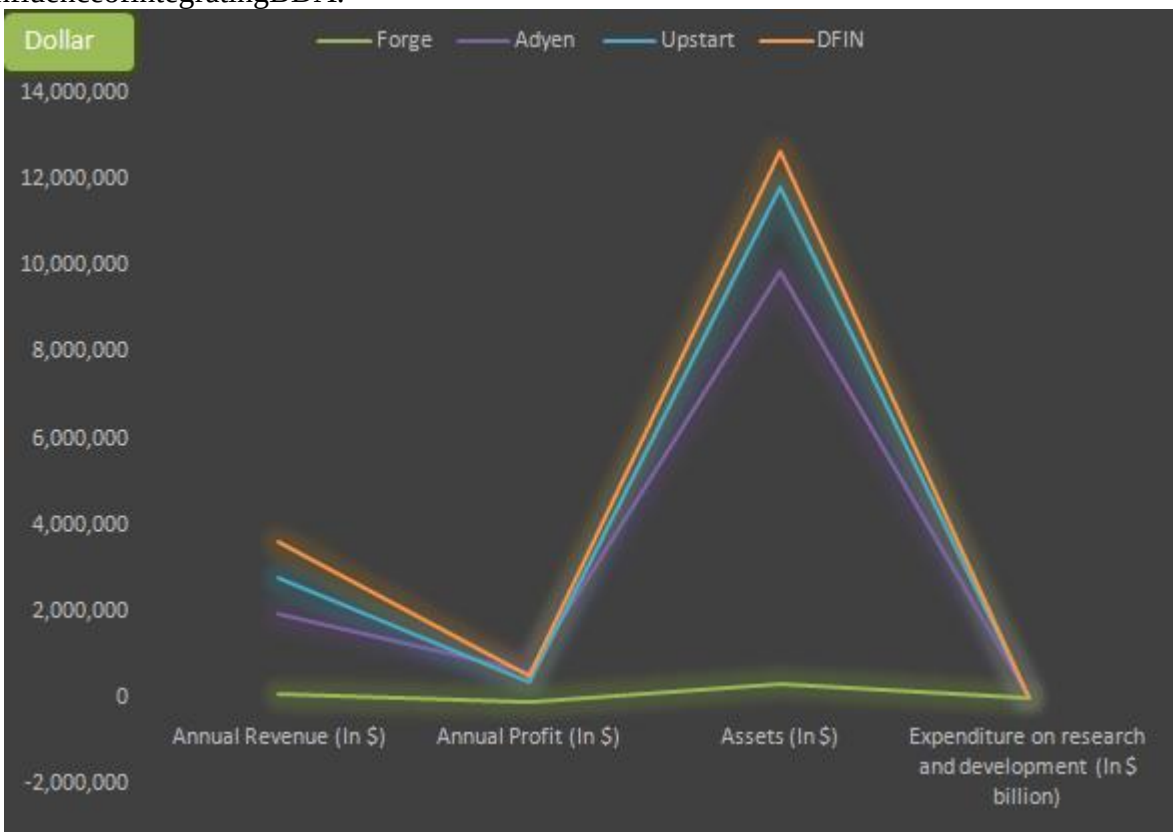

Figure 11: Performance analysis of the firms in the Healthcare sector

(Source: Developed via MS-Excel)

Among all the firms present in the financial sector of Ireland, Adyen and DFIN has been able to enhance their annual revenue and profit. The firms have also been able to enhance their expenditure on research and development and implement big data analytics effectively in their operation process. This has enabled the firms to enhance the service level and customer base. Big data analytics is essential for successful business operation and to improve the quality of services provided to the customers. The financial sector is highly competitive in nature with a wide range of firms that cater to the needs of the customers, hence an effective business model such as the big data analytics is essential.

The innovation and research and development streamline the processes of baking and enhance customer experience while reinforcing the position of the business as a forward-thinking institution. Strategic thinking demands insight, foresight and creativity, foresight shadowing the future, and foreseeing shape in the materialized while insight focuses on uncovering the process which gives sense to the future (AlQershi, 2021). A retail giant like Musgrave Group integrates big data in strategic planning to foster innovational dynamics. The companies are using analytics to analyse the targeted marketing campaign and changing preferences of consumers easily.

Within the logistics sector like the use of data analytics is helpful in hence its innovative efforts. The company also developed a smart solution for delivery like automated sorting systems and parcel lockers which are generally based on the delivery data insight. These paradigms of innovation help in improve efficiency and caterer the e-commerce growing demand. Today's professional businesses create techniques, to outwit the emerging competition in their own industries, as the business competing age has grown difficult

(Alhosseiny, 2023). The big data analytics supports the innovational dynamic and strategic planning through providing a deep understanding of operational challenges, customer needs and market trends. As the organisation is integrated with analytics in its process planning is also equipped to maintain and innovate the competitive edge.

6.3 Experiment on the retail sector

6.3.1 Emerging Technological Enablement in the Diverse Sector

Big data analytics are driving the force behind the advancement of emerging technologies across diverse industries for empowering the organisation to integrate the innovational solution within its operational frameworks. The recent major challenges for enrolment of the patient created opportunity for them to differentiate the offerings and they are also focused on reducing the recruitment times of patients by implementing investigator selection and enhancing sites based on the metrics key performance. Big data is defined as a large set of heterogeneous data which are coming from sources having several formats and real-time flowing (Hu *et al.* 2021). Majorityof the retail brands such asYotpo, AB Tasty, Bluecore, Shein, AnthologyAI, and Da Vincifeatured a positive relation with the BDA application.

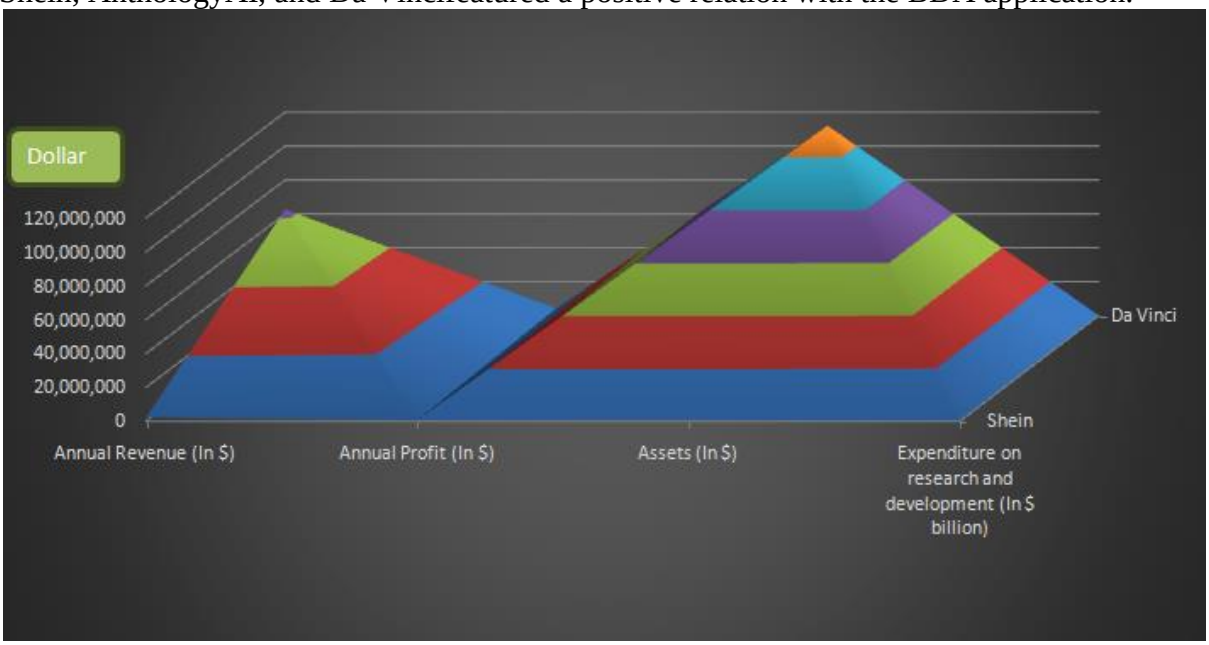

Figure 12: Performance analysis of the firms in the Retail Sector

(Source: Developed via MS-Excel)

The retail sector of Ireland is significant in terms of the needs of the consumers. The retail companies present in the sector cater to the day to day needs and demands of the consumers. Hence it is essential for the retail companies of Ireland to obtain proper insights to the rapidly changing needs and preferences of the consumers. This can be done by implementing the big data analytics which identify the needs of the consumers based on their search trends and alerts to the same is sent to the firms. Significant technologies integrated with AI have enabled the firms to enhance the service level.

The companies also embraced different emerging technologies like IoT and advanced logistics software which further enhance the business's operational capabilities. However, industry 5.0 uses intelligence to create the models and uses predictive analytics which further aims to make less unstable decisions and make them more accurate (Maddikunta*et al.* 2022). Coupled with block chain technology is useful for the retail sector to ensure traceability and transparency within its dynamic supply chains while fostering the trust of the consumer.

Through combining big data analytics with the manufacturing or construction sector, any business can optimise the use of materials, structure the performance dynamic and produce

the energy consumption dynamic. This innovative dynamic is aligned with the focus of the company towards efficient and sustainable construction solutions. The data-driven technology is taken as an important factor which helps in controlling the physical object to respond to the upper-level command (Mabkhot*et al.* 2021). The company leverages this dynamic as it enables the merging of technologies for their client. Through leveraging the big data, the company provide a more focused solution which further helps in integrating the dynamic of "robotic process automation (RPA)," blockchain and AI to solve the complex challenges of business. It also helps streamline the services of the customer through the operations by using predictive analytics and AI-driven chat-bots while reducing costs through improved engagement of customers.

6.4 Experiment on the telecommunication sector

6.4.1 Predictive analytics influences the process of decision-making

The predictive analytics help to create an actionable recommendation through analysing the real-time and historical data, which also helps in enabling the organisations to make any well-informed decisions. Through evaluating the creditworthiness of customers while using the predictive models and providing recommendations for any loan terms, the bank focuses on minimising the risk while ensuring the satisfaction of the customer. Predictive analytics also help guide the business in its marketing strategies and suggest tailoring the financial products based on the profiles of individual customers. Predictive analytics help enable organisations to anticipate the needs of future trends and make the proactive decisions, which further help them to ensure that they stay ahead in the competitive markets. Predictive analytics are mainly equipping the organisation with a better foresight which is needed to navigate the alignment and uncertainty within the further challenges and opportunities of the organisation. In the sector of telecommunication, T-Mobile, AT&T, Cisco Systems, Verizon, and Ericsson followed success with the application of BDA.

Figure 13: Performance analysis of the firms in the Telecommunication Sector

(Source: Developed via MS-Excel)

Among all the firms present in the telecommunication sector of Ireland, AT&T and the Verizon has been able to enhance their annual revenue from sales. Likewise, these two companies have been able to enhance their annual profit level. This has been made possible due to the implementation of the big data analytics in the business operation process of the

two companies. Insights to the consumer preferences could be obtained effectively using the big data analytics tool powered by the AI that. They identify the behavioural trend of the consumers and provide insights to the same to the companies. This enables the organisations to optimise the service level and their business goals and objectives are well aligned with the service of the company.

In the dynamic of predictive analytics, the customer evaluates the data from the patient demographic, regulatory guidelines and previous trials to recommend the design based on the optimal trials as it helps balance the effectiveness, cost and safety, these approaches help ensure the delay and foster a better outcome of the trail which ultimately biggest stakeholder and patients as well. The digital environment effectiveness helps in optimising, tracking and managing the strategies that make the marketing dynamic more flexible (Barbosa *et al.* 2023). The predictive analytics help to guide the decisions on sustainable production processes and material sourcing. Through evaluating the market trends and environmental data, the company receives the actionable insights for reducing its carbon footprint while maintaining the dynamic of cost-effectiveness. Through providing a clear recommendation based on the complex data this perspective analytics can help to ensure the decision for not only the data-driven tools however it also aligns with its organisational goal.

6.5 Experiment on the manufacturing sector

6.5.1 Risk and Uncertainty Management for better strategic actions

The manufacturing businesses known as Siemens, Ford Motor Company, 3M, Bosch, Boeing, and General Electric have had amedium positive effect by implementing BDA. The reason remains as addition of several other technological solutions to back the benefits of BDA such as making key decisions in a timely manner to avoid business risks.

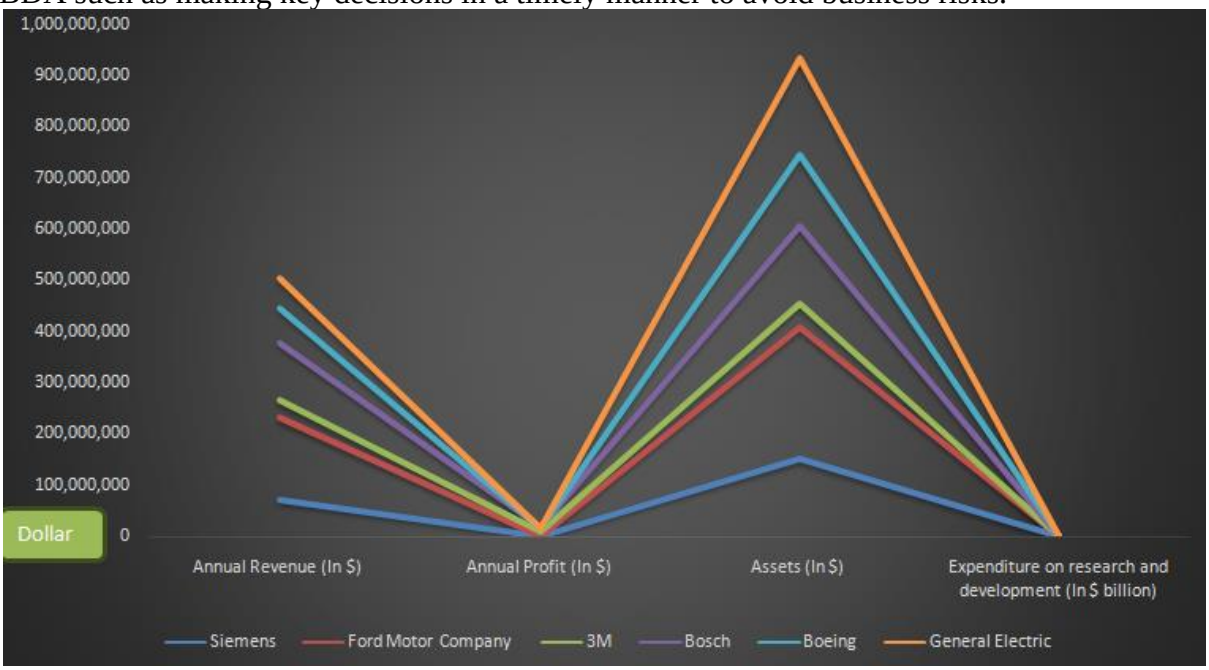

Figure 14: Performance analysis of the firms in the Manufacturing Sector

(Source: Developed via MS-Excel)

Through analyzing the market trends and historical sales data, the company is forecasting the demand for a more specific product, which helps in enabling precisely targeted promotions and inventory management. The predictive analytics can inform the design of the buildings which is energy-efficient through simulating energy consumption in future based on environmental data and historical data. This also helps in developing innovative products which meet the need of future market demands and their regulatory standards.Big data

analytics has a critical dynamic for effective risk management; it also mitigates the potential threats and enables organizations to anticipate them. The BDA insights also help enable the company to implement the preemptive measures and maintain a reliable service. Through giving action strategies and insight, the organisation can easily help to navigate the uncertainty and also foster resilience. Risk management in bid data analytics are helping enable the organization to act accordingly and proactively through ensuring continuity and stability in this volatile environment of business.

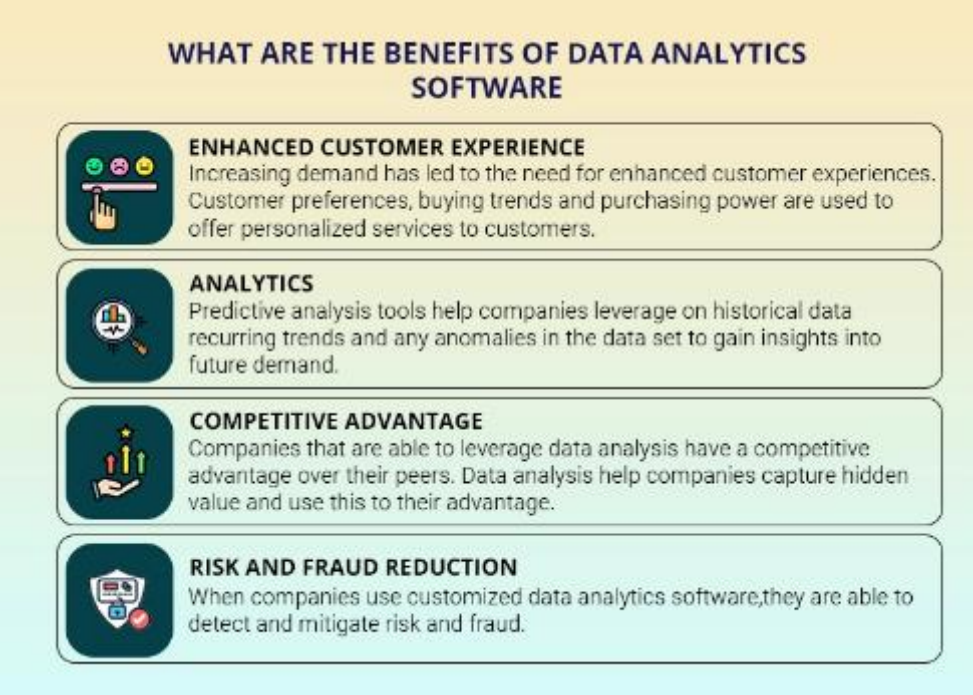

Figure 15: Data Analytics Software benefits

(Source. Duff, 2023)

The average organisation is not utilising "60% to 73%" of their business data (Duff, 2023).These insights are generally helpful for enable companies to implement the preemptive measures and maintain service reliability.

6.6 Discussion

- The ***strategic decision making process with the help of BDAis boosted in various ways as time is saved, and resources are optimised in the business***. The Irish firms benefit from the integration of BDA as these businesses predict the market requirements and optimise the product or service development in such manner. The BDA assists the different business functions which helps keep a competitive edge over other firms that are not investing in the concept of BDA. The efficiency, innovation, and competitiveness are all positively influenced by BDA in an organisation. Higher efficiency is achieved in a business as the businesses get to optimise the resource use in the operations. The innovation standards are kept high with the association of BDA because BDA promotes several other advanced technological solutions such as machine learning, automation, and robotics. Depending on different outcomes that are found from the companies that are evaluated in the case studies mentioned above, the sector-wise usage of Big Data Analytics is discussed. The main reason behind the high investment in Big Data in the healthcare sector is the development of a proper risk management strategy (Batko and Ślęzak, 2022). Big Data within the organisational workforce helps to facilitate the "evolutionary fitness" within the performance level of organisations (Mikalef*et al*. 2020). Another important field that is witnessing the inclusion of Big Data Analytics at a high rate includes the Sales department. Most

companies nowadays are using Big Data for analysing personalised choices for navigating their inventories (Deng *et al*. 2020). The supply chain is an entity that needs Big Data Analytics inclusion within its processes at a high level to reduce the chances of disruption within the chain. The Irish companies, irrespective of different sectors, show a tendency to Supply Chain Big Data Analytics inclusion investment. The strategic decision-making to create an alternative supply chain based on the requirements is an essential task for these companies. Big Data Analytics, being a new branch of Technology, needs continual innovative assistance to be embedded to stay relevant in the race (Holmlund *et al*. 2020). The usage of resources at such a low level in the technological improvement to cope with the new age of Big Data Analytics is astonishing. Revenue development is the main aim for most companies regarding their profitability inclusion. The big data-based forecasting of information through the development of specific processes in the Data channelling and risk management capacity improvement helps in the enhancement of revenues (Emmert-Streib *et al*. 2020).

- The companies in the healthcare, finance, retail, telecommunication, and manufacturing sector are using BDA to make rationalised decisions. ***The impact is created in terms of enhancement of the strategic decision making process in the firms***. In the domain of healthcare, the ideal companies for the research wereIBM Watson Health, Flatiron Health, Cerner Corporation, Tempus, Health Catalyst, and Prognos. Level of influence of big data remained to be high for these brands in this sector. On the other end, in the domain offinance, Flowcast, Demyst, Forge, LoanStreet Inc., Adyen, Upstart, and DFINwitnessed moderate to high positive influence of integrating BDA. Mostof the retail brands such asYotpo, AB Tasty, Bluecore, Shein, AnthologyAI, and Da Vinci registered a high positive relation with the BDA application. In the domain of telecommunication, the major businesses focused remained as T-Mobile, AT&T, Cisco Systems, Verizon, and Ericsson as these followedan identical success route such as the retail sector.
- Themanufacturingbusinesses in the form ofSiemens, Ford Motor Company, 3M, Bosch, Boeing, and General Electric showcased moderate positive effects of implementing BDA. It is because BDA could not be a standalone tool for the manufacturing sector to establish dominance and strategically pace the business actions.The strategic decisions in the field of healthcare, finance, retail, telecommunication, and manufacturingare made based on the availability of bulk data. It is because BDA aids in processing large data sets for these companies, thereby allowing better lead generation, product development ideas, and market penetration scope. BDA uses the existing market data to project an optimised path for future operations. ***The selected organisations from the sector are using BDA to enhance their strategic decision making process***.
- ***The strategic decisions are made in the health care, finance, retail, telecommunication and the manufacturing sector using BDA in various ways***. In the health care sector, it enables the doctors to predict the disease ailment and the treatment that will be needed to the patient. In the financial sector it enables the financial companies to predict the investment decision of the customers and accordingly pitch the right financial product. The retail sector being competitive in nature, the tastes and preferences of the consumers keep changing rapidly which is why it is essential to keep a track of the purchasing habits of the customers and accordingly suggest them the best products. The BDA contributes in the manufacturing sector effectively by managing the operation process and streamlining the cost of the production which contributes to enhancement in cost savings.

7. Conclusion and Future Work

Big data, “Machine learning”, “AI” and “Cloud Computing” influence the formation of strategic decisions in various sectors. Large organisations accept these technological adaptations in implementing the transformation process of technologies, “bolster the profit and loss” and fulfilling the “requirements of consumers.” Big data has influenced the working process of diverse sectors with the insights of the “real-time stock market” and with making the interchanges within the workforces and detecting the “fraud” within the business. All these services are influenced by the “increasing revenue” and satisfy the consumers by enforcing the effective process in the working procedure of companies. Improving the way of purchasing products, “streamlining the workflow” and analysing the growth of enforced resources within the organisational working process, Big Data analytics improve the strategic progression of business in various industries. Virtuous types of transmissions are there with this process, still within the enhancement of the technological involvement within the work process, Big Data analysis has to experience various issues.

Privacy and the “protection” of information are the most important issues within the implementation process of Big Data analytics. Besides this, the quality of data and the “regulatory requirements” within the services of Big Data analysis are the challenging factors. Within this era of Big Data, most organisations are “overwhelmed” with the data collected from “traditional” and “advanced sources” including the “social-media platforms”, “third-party cloud platforms” and the IoT devices associated with the transaction process of business. Maintaining the supply chain management system within the organisations, this analysis assists the management in “stimulating” the performance by “expediting” timely decisions for the revenue management of companies. Analysing the usage of this service within various Irish organisations, the findings of this study enhance the quality of information related to the effective enforcement of this service within the organisational workforce. Enforcement of this service within the working process manages the reduction of cost used within the working process by motivating the initiatives of new products.

Future work should be on the concentration improvement of the Big Data analysis services within the effective application of diverse ways within the work process of organisations. Improving the life cycle of products and creating sustainability within the production management of organisations, the use of this analysis should be examined properly for further development. The techniques associated with this service can be “upgraded” by providing concern to the sectors of “production” and “procurement” (Iqbal et al. 2020) The managerial bodies along with the employees of companies should engage in the training process and implementation planning of this service so that this process can be less time-consuming (Maheshwari et al. 2021). In the future, various researchers will be significant in realising the issues associated with the “promised benefit” of Big Data service within the business of various organisations. This is the most important fact that the “large sets of data” management for the bigger organisations are important compared through this analysis service compared to the smaller industries.

The management of the datasets is expensive and sometimes, this is impossible to manage that information with the involvement of individuals from organisations. Therefore, future studies related to the service of this Big Data may focus on the aspect of the easy accessibility of this service within the organisational working process. Another important focus should be on the exploration of the “impact” of this analysis on “financial products” and services. There is a need in the process of implementation of the “Big Data” services within financial institutions (Hasan et al. 2020). Future researchers can use the result of this study in creating the “complex models” of this process. Future research can initiate an investigation into the application of “Big Data analysis” in managing the challenges within the supply chain system, considering the aspect of the “manufacturing industry” (Bag et al.

2020). Apart from that the capabilities of “Big Data” within the organisational work process impacting on the development of “green products” within the organisational production. Future studies might test the “moderating” and “mediating” role of trust in the “relationship” between the “capability” of this analysis and the integration of the supply system in healthcare industries. The flexibility within the implementation process and the mitigation of the requirements of consumers related to the “real-time data”, and the “Big Data” analysis improve the process.

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